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ABSTRACT

This report contains an analysis of data collected during Phase 1 (spring 1979) of a project to develop and validate standards for industrial arts education programs. These data detail responses to four instruments devised by the project tc survey fifty-four state and territorial supervisors of industrial arts and 2,235 public school principals, industrial arts chairpersons, and guidance coordinators identified in three national samples. Chapter 1 is an introduction which overviews the project and describes the data collection process. The middle eight chapters describe survey findings divided into these major areas: (1) philosophical views, (2) instructional program for industrial arts education, (3) industrial arts students, (4) industrial arts student organizations, (5) teachers of industrial arts, (6) industrial arts facilities, (7) finance, and (8) evaluation in industrial arts education. Over 100 tables are provided. Chapter 10 provides a summary and cites implications. Appendixes include questions from surveys of secondary schcols and state-territorial supervisors and additional data analyses. (YLB)

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ED198258

Standards for Industrial Arts Program Project

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

REPORT OF SURVEY DATA

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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REPORT OF SURVEY DATA

(As Required by Task 9c of RFP 78-129)

Revised September 1980

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Project No. 498AH80061 (RFP 78-129)

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FOREWORD

In August 1978, the United States Department of Health, Education, and Welfare, through the Office of Education (USOE), issued a Request For Proposal (RFP) to develop standards for industrial arts education programs. A number of institutions and agencies responded to this RFP with proposals. On October 1, 1978 the Industrial Arts Program Area at Virginia Polytechnic Institute and State University was awarded a contract by USOE. The project was organized into three one-year phases, beginning in 1978 and ending in 1981. During Phase I, a data base for industrial arts was established; during Phase II and Phase III standards for industrial arts were to be developed and validated. This report contains an analysis of the data collected during Phase I.

ACKNOWLEDGEMENTS

The Standards for Industrial Arts Education Programs Project would like to thank all those who helped in providing data for this report. Specifically, we would like to recognize the state and territorial industrial arts supervisors, principals, industrial arts chairpersons, and guidance coordinators who responded to the survey.

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Chapter 1
INTRODUCTION

1.1 RATIONALE

"There is perhaps no area of the school curriculum which is less understood than the field of industrial arts."

FEIRER AND LINDBECK (1964, p. 4)

This statement succinctly expresses the opinion that many teachers, supervisors, administrators, and teacher educators have today about industrial arts education. While industrial arts education has been in existence since the early part of the twentieth century, there is no set of validated national standards to guide the profession. Therefore, it is not surprising to find a lack of national concensus on industrial arts program structure.

Prior to this study, the latest comprehensive information on the number and nature of industrial arts programs, teachers, and students came from data collected during the 1962-63 school year by Marshall Schmitt and Albert Pelley of the U.S. Office of Education. The report was published in 1966 by the U. S. Department of Health, Education and Welfare. Some more current accurate data exist, but researchers have found national and state data that are routinely collected to be fragmented. This is a result of different reporting systems designed to obtain data for varied purposes.

There is a need for a common national data base to aid in monitoring the continued development of industrial arts education programs. Once obtained, these data can provide a quantitative and qualitative basis for the development of philosophies, program standards, pre-service and in-service teacher training, facilities, and student organizations. Many excellent program standards have been written by volunteer committees composed of members of state and national professional associations such as the American Industrial Arts Association (AIAA). However, these committees did not use nationwide data in their work. The necessary data simply did not exist. Furthermore, the standards

developed by volunteer committees have not undergone an empirical validation procedure. A few individual states have developed program standards that are measurable, but none of these standards have been nationally accepted. The need for a set of thoroughly researched and validated standards for industrial arts programs is evident. Such standards, if accepted and applied throughout the profession, could do a great deal to promote cohesiveness and interaction among members of the profession, and to enhance and accelerate further development of industrial arts education philosophies and programs in the total school curriculum.

1.2 STANDARDS FOR INDUSTRIAL ARTS EDUCATION PROGRAMS PROJECT

The Office of Education of the U. S. Department of Health, Education, and Welfare issued RFP 78-129 for the development of standards for industrial arts education programs in August 1978. On September 29, 1978, the Industrial Arts Program Area at Virginia Polytechnic Institute and State University was awarded Contract No. 300-78-0565 (Project No. 498AH80061) to develop these standards. The Standards for Industrial Arts Education Programs Project began operation under the direction of Dr. William E. Dugger, Jr. on October 1, 1978.

1.3 PURPOSE OF THE STUDY

The overall purpose of this project was to develop standards and guidelines for the improvement of industrial arts programs that fulfill the objectives of the Vocational Education Act of 1963, as amended by the Educational Amendments of 1976. In keeping with USOE's policy statement regarding student organizations, this project sought to facilitate the incorporation of the American Industrial Arts Student Association (AIASA) into the total fabric of industrial arts education. Other vocational education programs have national student organizations that to promote the development of the total student. At the time of this study, AIASA did not have the degree of integration into industrial arts programs that other vocational education student organizations had in their respective program areas. AIASA clubs were established in only about 2% of the secondary schools in the United States in 1978-79, whereas other vocational student organizations were established in a large majority of the schools that

offered programs. For example, approximately 94% of the vocational agriculture departments had Future Farmers of America chapters.

An additional purpose of this project was to increase the awareness of administrators, supervisors, and teacher educators to the potential of industrial arts as a vital support link between general and vocational education. Another major emphasis was to increase the overall effectiveness of the industrial arts classroom teacher.

1.4 GOAL OF THE PROJECT

The goal of the project was to establish a data base that would facilitate the development of exemplary standards for improving the quality of industrial arts education programs and assuring that the industrial arts student organization is an integral part of the educational process. In addition to the standards document, the project was to develop a handbook for teachers, administrators, and teacher educators to help implement the standards. The handbook was to include recommended ways to reduce sex-bias stereotyping, to encourage handicapped and minority students' participation, and to make AIASA an integral part of industrial arts programs.

1.5 PROJECT OBJECTIVES

The RFP identified three primary objectives.

1. To develop a data base on industrial arts education programs (as defined in Title 1, Part C, Section 195(15) of the Education Amendments of 1976) and on industrial arts student organization activities as integral parts of industrial arts instructional programs.

2. To develop a set of standards and related handbooks for insuring quality industrial arts education programs.

3. To familiarize, publicize, and demonstrate the standards developed for industrial arts education programs.

1.6 OVERVIEW OF THE PROJECT

The project was organized into three one-year phases (shown below). The first phase ran from October 1978 through September 1979. The second and third phases were from October 1979 through September 1980, and October 1980 through September 1981, respectively.

PHASE I	PHASE II	PHASE III
Oct. 78-Sept. 79	Oct. 79-Sept. 80	Oct. 80-Sept. 81
Project Organization, Data Collection, and Data Analysis	Preliminary Development and Validation of the Standards	Final Standards Development and Dissemination

1.6.1 Phase I

The primary task completed in the first phase was the establishment of the national data base for industrial arts which is contained herein. These data will facilitate the development of exemplary standards for industrial arts programs (Phase II).

The population sampled consisted of fifty state and four territorial industrial arts supervisors and selected industrial arts chairpersons, principals, and guidance coordinators in secondary schools with industrial arts programs. The chairpersons, principals, and coordinators were selected from three types of schools: (1) a randomly selected sample, (2) schools with AIASA-affiliated student clubs, and (3) schools with exemplary industrial arts programs.

Data were collected on (1) secondary school industrial arts teachers and students; (2) student clubs; (3) the qualitative elements that affect the total industrial arts program, such as facilities, content, methodologies, staffing, enrollments, and resources; and (4) perceptions of principals, guidance coordinators, and industrial arts chairpersons on the purposes of industrial arts and other aspects of industrial arts programs. These data were used to make comparisons among the industrial arts programs in the three study samples. From those comparisons, qualitative and quantitative elements were identified for possible inclusion in the standards to be developed for industrial arts programs.

1.6.2 Phase II

During the second phase of the project (October 1979-September 1980), the preliminary standards will be developed through a series of four national workshops. Meetings to allow additional input are scheduled for the American Vocational Association (AVA) convention and the American Industrial Arts Association (AIAA) conference. By the end of this second phase, the preliminary standards and the preliminary handbook will be completed. Those documents are scheduled for further revision, validation, and dissemination during Phase III of the project (1980-81).

1.6.3 Phase III

During the third phase of the project, the standards will be validated and disseminated to the profession. Seven national workshops are planned to provide for review, revision, and validation of the standards by a national cross section of the profession. Workshops are also planned for the AVA Convention, in December 1980, in New Orleans and the AIAA Conference, in March 1981, in Pittsburgh. After the workshop review, revision, and validation process is complete, the standards will be cast in their final format and printed.

1.7 ADVISORY COMMITTEES

Two advisory committees, made up of experts in industrial arts education, vocational education, and related areas, were formed to advise the project on quantitative and qualitative aspects of the study. Their expertise relative to special considerations such as sex-role stereotyping, the handicapped, and the disadvantaged, aided in the design of the survey instruments, the data collection techniques, and analysis of survey data during Phase I.

1.7.1 National Advisory Committee

The National Advisory Committee consisted of the following people:

*Mrs. Bobbie Andrusky
Industrial Arts Teacher in Satsuma, Alabama, and
Vice-President of the Board of Directors, AIASA, Inc.

Mr. Ronald W. Applegate
Executive Director of AIASA, Inc., Washington, D.C.

Ms. Donna K. Boben
Sex Equity Specialist for Vocational-Technical Education,
Minnesota State Department of Education

Dr. John E. Bonfadini
Supervisor of Industrial Arts and Trade and Industrial Education,
Prince William County Schools, Virginia, and
Past President of American Council of Industrial Arts Supervisors

Mr. Lee D. Carter
State Supervisor of Industrial Arts,
Idaho Department of Education, and
former President of AIAA

Dr. Leon L. Copeland
Assistant Professor,
University of Maryland, Eastern Shore

Dr. Harold R. Crawford
Past Director,
Project to Develop National Standards for Agricultural Education,
and Head of Agricultural Education, Iowa State University

Mrs. Nancy Carol Eliason
Director of the Center for Women's Opportunities,
American Association of Community and Junior Colleges,
Washington, D.C.

*Mr. James E. Good
Supervisor of Vocational Education of Central School Dist. No. 1,
Greece, New York, and
President of AIAA

Dr. Clyde M. Hackler
Chairman and Professor,
Western Washington State College

Mr. Thomas A. Hughes, Jr.
State Supervisor of Industrial Arts,
Virginia Department of Education

*Dr. David L. Jelden
Professor, University of Northern Colorado, and
former President of American Council on Industrial Arts
Teacher Education

Ms. Laura Lewis
Industrial Art Teacher in Medford, New Jersey, and
Past Vice-President for Classroom Teachers, AIAA

Mr. Donald L. Rathbun
Executive Director of AIAA,
Washington, D.C.

*Dr. Willis E. Ray
Professor,
The Ohio State University, and
Past President of AIAA

Mr. Arthur L. Robb
Industrial Arts Teacher in Louisville, Kentucky, and
former Vice-President for Classroom Teachers, AIAA

*Dr. Ralph V. Steeb
State Supervisor of Industrial Arts,
Florida Department of Education, and
AVA Vice-President for Industrial Arts

Dr. William E. West
Professor,
Clemson University, and
AVA Vice-President for Region 2

*Members of the five-person advisory subcommittee to help in standards development and validation during Phase II and Phase III.

1.7.2 Virginia Tech Advisory Committee

A group of highly qualified faculty consultants was provided for this project on a no-cost basis by Virginia Polytechnic Institute and State University. These consultants have nationally recognized expertise in research methodology, survey research, vocational education, guidance and counseling, career education, and in the problems of the disadvantaged, the handicapped, and minorities. These consultants are listed below.

The consultants who served on the advisory committee were:

Dr. F. Marion Asche
Associate Professor,
Vocational and Technical Education

Dr. Lawrence H. Cross
Associate Professor,
Educational Research

Dr. Carl O. McDaniels
Professor and Program Area Leader,
Guidance and Counseling and Career Education

Dr. Robert L. McGough, III
Assistant Professor,
Vocational and Technical Education

Dr. Johnnie H. Miles
Associate Professor,
Guidance and Counseling

Dr. D. Michael Moore
Associate Professor,
College of Education Curriculum Lab

Dr. Lee M. Wolfle
Assistant Professor,
Educational Research

1.8 DATA COLLECTION PROCESS

The data collection procedures used in this study are discussed in this section. The respondent universe from which the industrial arts population was drawn is presented, and the sampling plan used to identify the public secondary schools is explained. Finally, the response rate for each of the samples is reported.

1.8.1 Description of Sample Plan

Two categories of surveys were conducted: (1) a national survey of three types of public secondary schools that had industrial arts education programs, and (2) a survey of the fifty state and four territorial industrial arts supervisors. Surveys were administered to the principal, guidance coordinator, and industrial arts chairperson in each of the three types of schools. The surveys they received are described in Section 1.8.2.

1.8.1.1 Surveys of Public Secondary Schools

Three types of public secondary schools were surveyed: (1) a random sample, (2) all secondary schools with AIASA-affiliated student clubs, and (3) schools identified by state supervisors of industrial arts as having exemplary industrial arts programs. The first of these types of schools to be discussed is the random sample.

The respondent universe from which the random sample was drawn consisted of approximately 89,000 public elementary and secondary schools (see Figure 1) in the United States. Within this universe, the target population sampled consisted of a computerized list of 20,436 public secondary schools (grades 6-12) that offered industrial arts programs. The computerized list of schools, which was updated in the fall of 1977, was maintained by Market Data Retrieval, Inc. in Westport, Con-

necticut (formerly Curriculum Information Center, Inc. in Denver, Colorado).

Market Data Retrieval, Inc. furnished certain information for each of 1,404 secondary schools that were randomly selected (Nth selection). This information included the principal's name, mailing address, and the type of school. Each principal chosen to participate received a packet containing a Principal's Survey, a Guidance Coordinator's Survey, and an Industrial Arts Chairperson's Survey. The principals were asked to forward the appropriate survey to the industrial arts chairperson and guidance coordinator under their supervision, collect the completed surveys, and return the surveys to the project director in a pre-addressed, stamped envelope.

A sample of 342 public secondary schools with exemplary industrial arts programs was identified through nominations by state and territorial supervisors and their staffs. State supervisors established their own criteria for identifying up to ten schools in their states or territories with exemplary programs. Alternatively, they could elect to identify school divisions that had exemplary programs, if they felt that specific exemplary programs could be better identified by local supervisors. In those cases, the local supervisor was contacted and asked to identify specific schools with exemplary industrial arts programs. Supervisors were then requested to supply all information necessary to mail the surveys to the school principals. The principals identified in this sample were sent the same surveys and instructions as the principals selected for the random sample.

A list of schools that had AIASA-affiliated student organizations was identified from the AIASA official roster. The roster contained 572 schools at the time of the request (January 1979). The principals of all 572 schools were contacted in the same manner as the other two groups of principals, and the same survey instruments were administered to them. Surveys sent to all participants were numerically coded prior to mailing to allow for distinctions to be made between the three types of samples and to allow for a follow-up procedure to be used. The follow-up procedure for the survey of public schools is shown in Figure 2. As noted, the surveys were mailed first-class on April 23, 1979. Each state and territorial supervisor was mailed a

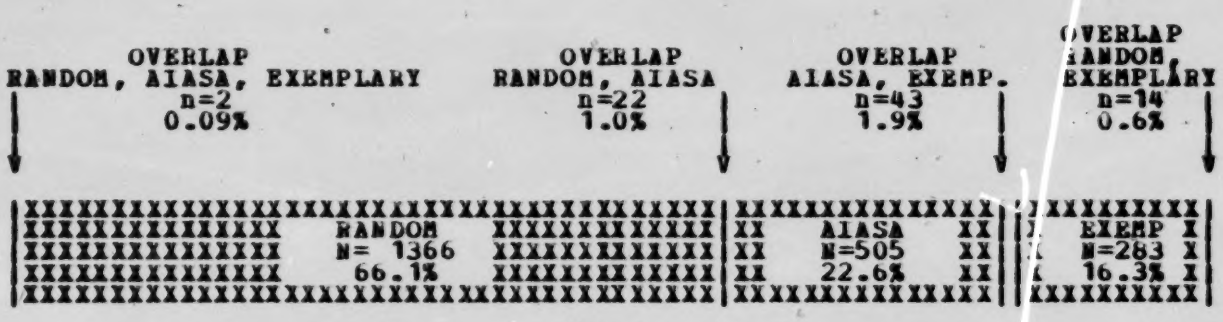
Figure 1: Universe, Populations, and Sample for the IA Standards Survey

list of the schools in their states that were selected to participate in this study. They were asked to assist the project by encouraging these schools to complete their survey forms and return them. A follow-up letter was sent to all schools that had not responded by May 18, 1979. A second follow-up letter was mailed to those schools that had not returned surveys by May 29, 1979. New instruments were also sent to 50% of these schools. The project staff called 10% of the schools that had not responded as of May 31, 1979. The non-response bias is explained in section 1.13. July 3, 1979 was established as the final cut-off date for receiving and processing the survey instruments.

1.8.1.2 State and Territorial Industrial Arts Supervisors

The state and territorial supervisors for industrial arts (in states that did not have state supervisors, other supervisors of vocational education, often trade and industrial education) were initially surveyed in April 1979. The follow-up procedure which was used is illustrated in Figure 3. The states from which it was most difficult to obtain responses were, not surprisingly, those states that did not have a supervisor specifically for industrial arts. After the final cut-off date, the data were transferred to a standard optical-scan form and read on to magnetic tape. The analysis of data revealed that several of the critical demographic questions elicited very few responses. After examining these data, the national advisory committee, which included three state supervisors, recommended that a presentation of the data be made to the state supervisors who would be meeting in Memphis, Tennessee in October 1979 at the National Staff Development Workshop for State Supervisors of Industrial Arts. The committee further recommended that a final attempt be made to collect additional information from the supervisors at that time. New surveys with only those critical questions that were left blank were prepared for each state and were personally presented to supervisors at the Memphis meeting. Surveys were mailed to supervisors who did not attend the conference. This effort resulted in the collection of some additional data.

SURVEY OF PRINCIPALS, GUIDANCE COORDINATORS, & IA CHAIRPERSONS



DATES/EVENTS

APRIL 23 . Mailed surveys to 2235 schools (3 separate surveys per school)

APRIL 24 . Mailed lists of schools in each state to appropriate State Industrial Arts Supervisors

MAY 1-8 . State Industrial Arts Supervisors mailed out their endorsement/follow-up to schools within their states.

MAY 18 . First follow-up: Letter mailed to approximately 1400 schools that had not responded.

MAY 29 . Second follow-up: Letter mailed to 595 (50%) schools that had not responded, letter and second set of surveys mailed to 595 (50%) schools.

MAY 31 . Telephone follow-up: 10% of schools that had not responded.

JUNE 8 . Non-response bias research completed

JULY 3 . Official cutoff date.

Figure 2: Data on Mailing and Follow-up for AIASA, Exemplary and Random Samples

1.8.2 Instrumentation

The data collection instruments that were administered are listed below:

1. the State and Territorial Supervisor's Survey,
2. the Principal's Survey,
3. the Guidance Coordinator's Survey, and
4. the Industrial Arts Chairperson's Survey.

The State and Territorial Industrial Arts Supervisor's Survey used a variety of forced-choice, open-ended, and fill-in-the-blank questions to obtain demographic data and the supervisors' opinions. The questions that were asked are listed in Appendix A. Question 5 was revised when an additional attempt was made to obtain data in October 1979. The words in parenthesis, "industrial arts," were added to clarify the data that were being sought.

The three public school surveys were formatted as optical-scan booklets and were printed by National Computing Systems in Minneapolis, Minnesota. The dossier program used to read the booklets onto a magnetic tape was written by a Virginia Tech programmer. Because of the length of these surveys and the difficult format of the questions, the questions for the three surveys, listed in Appendix A, are shown without the respondents' answer options. In the analysis of data which follows this chapter the stems of the questions are included with the tables of data.

1.8.3 Survey Response Rates

The response rates for the random, AIASA, and exemplary samples are shown in Figure 4. Schools that were included in more than one sample (for example, an AIASA-affiliated school that was also in the random sample) were called "overlaps." Returns from these schools were included in the data for each sample in which they overlapped. Each school received a set of three separate surveys: a Principal's Survey, a Guidance Coordinator's Survey, and an Industrial Arts Chairperson's Survey. Schools that returned only one or two of the three surveys

SURVEY OF STATE/TERRITORIAL SUPERVISORS

DATES/EVENTS	
APRIL 12	Initial mailing to 54 state and territorial supervisors of industrial arts
APRIL 24	1st Follow-up letter
MAY 3	1st Follow-up phone call
MAY 8	2nd Follow-up letter (NEW INSTRUMENTS SENT OUT)
MAY 23	2nd Follow-up phone call
MAY 29	3rd Follow-up letter (INSTRUMENTS SENT AGAIN)
JUNE 5	3rd Follow-up phone call
JUNE 12	4th Follow-up phone call
JUNE 19	5th Follow-up phone call
JULY 3	FINAL CUTOFF DATE

Figure 3: Data on Mailing and Follow-up of State Supervisor Survey Forms

were referred to as "partial returns." "Unusable returns" were schools that returned no usable data on any of the three surveys.

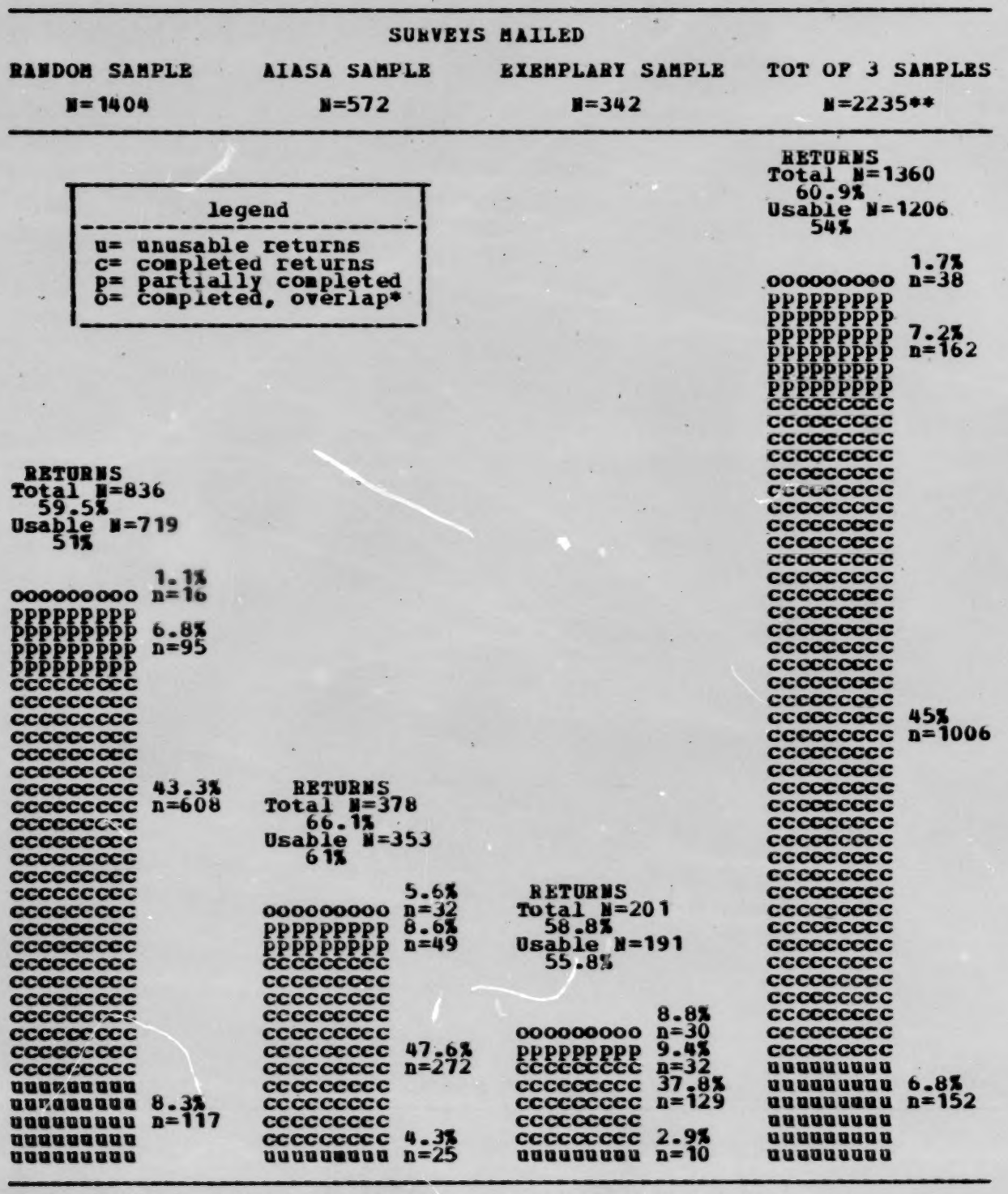
Of the sets of surveys that were sent to the 1,404 schools in the random sample, 608 (43.3%) were returned with all three surveys completed, ninety-five (6.8%) were returned with one or two surveys completed, and 117 (8.3%) were returned with no usable data. An additional sixteen completed sets of surveys (1.1%) were received from random sample schools that were also included in another sample (overlap). In this sample, a total of 836 (59.5%) schools responded, with 719 (51%) schools providing usable data for the final analysis.

Of the sets of surveys that were sent to the 572 schools in the AIASA sample, 272 (47.6%) completed sets of surveys were returned, forty-nine (8.6%) partial sets were returned, and twenty-five (4.35%) sets were returned with no usable data. An additional thirty-two (5.6%) schools that were included in other samples returned completed sets of surveys. In this sample, a total of 378 (66.1%) of the schools responded, with 353 (61%) schools returning surveys with usable data.

Of the 342 sets of surveys that were sent to the exemplary sample schools, 129 (37.8%) sets were completed and returned, thirty-two (9.4%) partial sets were returned, and ten sets (2.9%) were returned with no usable data. Thirty (8.8%) of the schools that were also in other samples (overlaps) returned completed sets of surveys. In this sample, a total of 201 (58.8%) schools responded, with 191 (55.8%) returning surveys with usable data.

The total number of surveys sent to all three samples was 2235. From this number, 1360 surveys (or 60.9%) were returned. The project was able to use 1206 (54%) of these surveys.

Of the fifty state and four territorial industrial arts supervisors surveyed, fifty-three (98.1%) responded. However, only fifty of the surveys contained usable data; three were completely blank. Of the fifty usable returns, many of the questions were not answered on some of the survey instruments.



*Schools included in two or more samples are reported in each sample.
**Total of samples does not equal sum of samples because of overlaps.

Figure 4: Survey Return Rates for Random, AIASA, and Exemplary Samples

1.9 ANALYSIS OF DATA

The Statistical Package for Social Sciences (SPSS), SPSS 1979 Update, and Statistical Analysis System (SAS, 1979 edition) sub-programs (such as "means," "condescriptive," "crosstabs," "frequencies," "breakdown," "hbar," and "multiple response") were used to compute the necessary statistics. These statistics included data on instructional programs, students, student organizations, teachers, administration, facilities, finance, evaluation, and philosophical views on industrial arts. Frequent use was made of the SPSS multiple response procedures, which greatly simplified data analysis. Fortran programs were also used for the analysis of some questions from the chairperson's survey.

1.10 SCHOOL SIZES OF SAMPLE SCHOOLS

The sizes of the schools that responded to the surveys in each of the three samples were determined by summing the general student enrollments that were reported on the principlas' surveys by grade level for grades six through twelve. Approximately 10% of the principals in the random and exemplary sample and 15% of the principals in the AIASA sample schools did not provide general student enrollment data. The random sample had the greatest percentage (28.0%) of schools with 499 students or less, compared to 10.2% for the AIASA sample and 17.3% for the exemplary sample. Correspondingly, the random sample reported lower percentages of schools having 500 or more students. Almost 60% of the random sample schools, compared to 45% of the AIASA sample and 46.6% of the exemplary sample schools, had fewer than 1,000 students. The exemplary sample was found to have a slightly larger percentage of schools with 1,000 or more students than either the random or AIASA sample schools. The predominant school size for all three samples was in the category of "500 to 999" students (see Table 1). Some of the questions from the surveys were analyzed by school size, and those findings are reported.

1.11 DEFINITION OF TERMS

Definitions for terms used in this report are given in this section.

TABLE 1

School Sizes of Random, AIASA, and Exemplary Sample Schools

STUDENT ENROLLMENTS	RANDOM SAMPLE			AIASA SAMPLE			EXEMP SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
No data	75	10.4	10.4	55	15.6	15.6	19	9.9	9.9
1-499	201	28.0	28.0	36	10.2	10.2	33	17.3	17.3
500-999	224	31.2	31.2	123	34.8	34.8	56	29.3	29.3
1000-1499	123	17.1	17.1	71	20.1	20.1	40	20.9	20.9
1500-2499	83	11.5	11.5	57	16.1	16.1	33	17.3	17.3
2500 and above	13	1.8	1.8	11	3.1	3.1	10	5.2	5.2
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

AIASA (American Industrial Arts Student Association): The industrial arts student organization for secondary school students. AIASA helps assure the quality and relevance of instruction, develop student leadership, enhance citizenship responsibilities, overcome sex and race discrimination and sex stereotyping, and serve students with special needs.

DISADVANTAGED PERSONS (VOCATIONAL EDUCATION): Persons (other than handicapped persons) who have academic or economic handicaps and who require special services and assistance in order to enable them to succeed in vocational education programs under criteria developed by the Commissioner of Education, based on objective standards and the most recent available data. (U.S. Statutes at Large. 1976)

FULL-TIME EQUIVALENCY (F.T.E.): The amount of time spent or required in a less than full-time activity divided by the amount of time normally spent or required in a corresponding full-time activity during the regular school term. Full-time equivalency usually is expressed as a decimal fraction to the nearest tenth. (U.S. Department of Health, Education, and Welfare. 1970)

GIFTED AND TALENTED: The mentally gifted include individuals whose level of mental development is so far advanced that they have been identified by professionally qualified personnel as needing additional educational opportunities beyond what is provided by the usual school program if they are to be educated to the level of their ability. The talented include individuals identified by professionally qualified personnel as being capable of high performance in one or more areas of special competence. Among these areas of special competence are intellectual ability; creativity; leadership ability and social adeptness; and facility in the productive and performing arts. (U.S. Department of Health, Education, and Welfare. 1970)

HANDICAPPED PERSONS: Persons who are mentally retarded, hard of hearing, deaf, speech impaired, visually handicapped, seriously emotionally disturbed, orthopedically impaired or other health impaired persons or persons with specific learning disabilities who by reasons thereof require special education and related services, and who, because of their handicapping condition, cannot succeed in the regular vocational education program without special education assistance or who require a modified vocational education program. (U.S. Statutes at Large. 1975)

INDIVIDUALIZED EDUCATION PROGRAM (IEP): A written statement for a handicapped child developed in any meeting by a representative of the local educational agency or an intermediate educational unit who shall be qualified to provide or supervise the provision of, specially designed instruction to meet the unique needs of handicapped children, the teacher, the parents or guardian of such child, whenever appropriate. (U.S. Statutes at Large. 1975)

INDUSTRIAL ARTS EDUCATION PROGRAMS: Those education programs (a) which pertain to the body of related subject matter, or related courses, organized for the development of understanding about all aspects of industry and technology, including learning experiences involving activities such as experimenting, designing, constructing, evaluating, and using tools, machines, materials, and processes and (b) which assist individuals in the making of informed and meaningful occupational choices or which prepare them for entry into advanced trade and industrial or technical education programs. (U.S. Statutes at Large. 1976)

SECONDARY SCHOOL: A school comprising any span of grades beginning with the next grade following an elementary or middle school and ending with or below grade 12. (U.S. Department of Health, Education, and Welfare. 1970)

STANDARDS FOR INDUSTRIAL ARTS: Measures of quality against which all existing industrial arts programs and activities can be evaluated and which serve as guides for new and expanding programs (e.g. standards consist of those qualitative elements that affect the total program, such as facilities, content, methodologies, staffing, enrollment, and resources).

SEX-EQUITY (VOCATIONAL EDUCATION): Equal educational opportunities in vocational education programs for persons of both sexes and the elimination of sex discrimination, sex bias, and sex stereotyping from all vocational education programs. (U.S. Statutes at Large. 1976)

1.12 ASSUMPTIONS AND LIMITATIONS OF THE STUDY

The following assumptions were made for Phase I, the research phase of the project.

1. The sample of schools prepared by Market Data Retrieval, Inc. was a random sample of public secondary schools with industrial arts programs.
2. The exemplary schools nominated by state and territorial supervisors of industrial arts had truly exemplary industrial arts programs.
3. The questions included in the surveys were sufficient to provide a comprehensive overview of the current status of industrial arts nationally.
4. The respondents, to the best of their abilities, answered the survey questions correctly.

The following limitations to the research phase of the project were identified by the staff.

1. Because of the contract requirement that each survey instrument be cleared with the federal government (FEDAC appro-

val), the data collection process for public schools did not take place until late (April-May) in the 1978-79 school year. If the instruments could have been mailed earlier a higher response rate might have been obtained.

2. A limited amount of data was provided by some of the state and territorial supervisors of industrial arts education.

3. The primary emphasis of the data analysis procedures during Phase I was descriptive. No trend or causal-comparative analyses were made for this report of survey data.

4. The survey questions asked of the various types of respondents were limited to those designed to provide information for the development of standards for industrial arts education.

5. The time required to obtain federal approval did not allow for any field testing of the survey instruments prior to their administration.

6. The samples included only secondary schools.

1.13 PROCEDURES FOR DETERMINING NON-RESPONSE BIAS

A ten-percent random sample of schools that had not replied to the survey by May 31, 1979 was identified and multiple attempts were made to reach each of the principals of these schools by telephone. Of the forty-seven schools so identified in the random sample, thirty-five (75%) were reached. Because of the previous time constraints on the mailing of the surveys, these telephone calls unfortunately had to be made at the end of May. By this time some schools had either closed or were in the process of closing for the summer. Many of the administrative personnel who could have provided the needed information were already on vacation.

Only three of the thirty-five schools reached had not received the survey instruments in the mail. Seventeen of the thirty-five indicated that they intended to complete and return their forms. However, responses from only five of these seventeen schools were subsequently received.

The fifteen non-respondents who indicated that they did not intend to return the survey forms were asked to give some information over the phone about the industrial arts programs in their schools. Six would not provide the information. Of the nine non-respondents who cooperated with the request for information, only three (33%) indicated that industrial arts courses were required in their schools. This percentage is consistent with that reported in Table 25 for the responding schools in the random sample, and somewhat higher than the percentages for the AIASA and exemplary samples.

The percentage of industrial arts teachers in the total faculty (see Table 3) for the non-responding schools is compared to the percentage in responding schools. The percentages are similar for the three samples, although the percentage for non-respondents in the exemplary sample is somewhat lower than that for the respondents (see Table 73). The small numbers of schools represented in these data, however, make inference difficult.

TABLE 3

Percentage of Industrial Arts Faculty in Total Faculty for Non-Respondents

SAMPLE	TOTAL N OF TEACHERS	INDUSTRIAL ARTS TEACHERS	% IA FACULTY IN TOTAL	
			TELEPHONE FOLLOW-UP RESPONDENTS	SURVEY RESPONDENTS
Random	608	36	5.9	5.4
AIASA	95	4	4.2	4.0
Exemplary	47	2	4.3	6.5

Chapter 2
PHILOSOPHICAL VIEWS

2.1 INTRODUCTION

The purposes or objectives of any educational program reflect the philosophical basis of that program and play an important foundational role in its development. For many years, philosophical views of industrial arts education have been a subject of discussion within the profession in an attempt to clarify, modify, or update existing statements of purpose, or to develop new approaches to industrial arts education. Questions related to philosophical views were included in the survey (1) to assess the current philosophy of the profession, (2) to compare this with previous philosophical positions, as stated in the 1962-63 study by Schmitt and Pelley, and (3) to determine future trends, as indicated by views of ideal emphasis on selected purposes of industrial arts.

2.2 PURPOSES OF INDUSTRIAL ARTS

Twelve possible purposes for industrial arts education, ten of which were taken directly from the Schmitt and Pelley report, were listed in each of the three survey instruments that were sent to the public schools. Principals, industrial arts chairpersons, and guidance coordinators were asked to indicate their perceptions of the current degree of emphasis placed on each of the twelve purposes and their opinions on the ideal amount of emphasis for each purpose. A three-item scale using the terms "high," "medium," and "low" was used to describe the current and ideal degree of emphasis of each purpose. The term, "high," was given a value of 3; the term, "medium," a value of 2; and the term "low," a value of 1. It should be noted that the means across all purposes for all respondents ranged from 2.9 to 1.8, or high to medium. The mean responses for the principals, guidance coordinators, and industrial arts chairpersons on each purpose were determined for the three samples and ordered from high to low. As shown in Tables 4 and 5, ranks from one (high) to twelve (low) were then assigned to the ordered means. The means and standard deviations from which the ranks were derived are shown in Appendix B.

TABLE 4

Rank Order Listing of Purposes of IA by Current Degree of Emphasis

PURPOSES OF INDUSTRIAL ARTS	RANDOM SAMPLE * RESPONDENT			AIASA SAMPLE * RESPONDENT			EXEMPLARY SAMPLE * RESPONDENT			** COMPARISON OF SCHMITT & PELLEY	
	C	GC	P	C	GC	P	C	GC	P	TCHR	PRIN
Skill in tools and machines	1	1	1	1	1	1	1	1	1	1	1
Provide technical knowledge and skill	2	2	2	2	3	3	2	2	2	4	4
Discover and develop creative talent	3	3	3	3	2	2	3	3	3	3	2
Develop worthy leisure time interests	4	5	4	7	6	5	5	7	5	7	3
Develop problem solving skills	5	6	7	4	7	9	4	5	8	2	5
Make informed educational-occupational choices	7	8	5	5	9	4	6	9	4	na	na
Provide pre-vocational experiences	9	4	6	8	5	7	9	5	6	9	6
Understand technical culture	6	9	9	6	8	7	7	8	7	5	7
Provide vocational training	10	7	8	12	4	6	11	4	9	10	8
Develop consumer knowledge and appreciation	8	11	10	10	12	10	8	11	10	6	9
Develop an understanding of the nature and characteristics of technology	11	12	11	9	10	11	10	10	11	na	na
Understand the application of science and mathematics	12	10	12	11	11	12	12	12	12	8	10

* C= Ind.arts chairperson; GC= Guidance coordinator; P= Principal.
** Rank order listings used in comparison were from 1966 report by Marshall Schmitt and Albert Pelley.

2.2.1 Current Degree of Emphasis on the Purposes of Industrial Arts
The ranks associated with perceptions of current degrees of emphases are presented in Table 4. Considerable agreement among chairpersons, principals, and guidance coordinators across the three samples is evident at both extremes of the ranking. The respondents in all three samples placed the greatest degree of emphasis on "developing in each student a measure of skill in the use of common tools and machines." Seventeen years earlier, the teachers and principals surveyed in the Schmitt and Pelley study also placed the greatest degree of emphasis on that purpose. Two purposes emphasized slightly less than developing skills in the use of tools and machines by the respondents in all three samples were "to provide general all-around technical knowledge and skills" and "to discover and to develop creative technical talents in students." Respondents in the Schmitt and Pelley study placed more emphasis on the latter purpose.

There were notable differences among the respondents on how much emphasis was placed on "providing vocational training for students who would not otherwise have this opportunity." The guidance coordinators in the AIASA and exemplary samples placed more emphasis (fourth highest) on providing vocational training than did either the principals or chairpersons in those samples. The amount of emphasis placed on vocational training by random sample coordinators tended to be similar to the amount of emphasis placed on it by the principals in all three samples. Chairpersons, on the other hand, placed less emphasis on providing vocational training than on any other purpose except "to develop an understanding of the application of science and mathematics." These two purposes also received the least amount of emphasis from respondents in the Schmitt and Pelley study.

Principals and chairpersons placed a greater degree of emphasis than did guidance coordinators on "helping students make informed educational and occupational choices." The coordinators placed more emphasis on "providing pre-vocational experiences of an intensified nature for those students interested in technical work" than did principals or chairpersons. As in the Schmitt and Pelley study, teachers (chairpersons, in this study) placed less emphasis on providing pre-

vocational experience than did principals. A discrepancy between the two studies which should be noted is the considerably greater emphasis placed by teachers in the Schmitt and Pelley study on "developing problem-solving skills relating to materials and processes."

2.2.2 Ideal Degree of Emphasis on the Purposes of Industrial Arts

The opinions of the respondents on the ideal degree of emphasis for the twelve purposes are shown in Table 5. The purpose receiving the highest current degree of emphasis, "to develop in each student a measure of skill in the use of tools and machines," was also the purpose which respondents overall indicated should receive the most emphasis. According to most respondent groups, the purpose currently emphasized the least, "to develop an understanding of the nature and character of technology," ideally should receive the least amount of emphasis. Collectively, the chairpersons in the exemplary and AIASA samples, however, placed more emphasis on this purpose than on two or three of the other purposes.

The chairpersons in all three samples tended to agree on the ideal amount of emphasis that should be placed on the other purposes, with three exceptions. Collectively, the chairpersons in the AIASA and exemplary samples would ideally place more emphasis on "developing an understanding of our technical culture" and less on "discovering and developing creative technical talents in students" than would random sample chairpersons. The random sample chairpersons ideally would place more emphasis on "providing vocational training" than would the AIASA and exemplary sample chairpersons. The latter ideally would place the least emphasis on "providing vocational training."

Guidance coordinators in each of the three samples indicated less emphasis should be placed on "developing consumer knowledge and appreciation and use of industrial products" than did principals and, especially, chairpersons. Chairpersons in all three samples said "providing pre-vocational experience" ideally should be emphasized less than coordinators said it should. Coordinators and principals placed more emphasis on several other purposes than on developing "problem-solving skills relating to materials and processes."

TABLE 5

Rank Order Listing of Purposes of IA by Ideal Degree of Emphasis

PURPOSES OF INDUSTRIAL ARTS	RANDOM SAMPLE			AIASA SAMPLE			EXEMP SAMPLE		
	RESPONDENT			RESPONDENT			RESPONDENT		
	CHP	GUID	PRIN	CHP	GUID	PRIN	CHP	GUID	PRIN
Skill in tools and machines	1	1	1	1	1	1	1	1	1
Make informed educational & occupational choices	4	2	2	2	3	3	3	3	3
Discover and develop creative talent	3	3	3	5	2	2	5	2	2
Develop problem-solving skills	2	5	4	3	6	6	2	6	6
Provide technical knowledge and skills	5	6	5	6	7	4	7	4	5
Provide pre-vocational experiences	9	4	6	7	4	7	8	5	4
Understand technical culture	7	7	8	4	8	5	4	7	7
Develop consumer knowledge and appreciation	6	11	9	8	11	9	6	11	9
Develop worthy leisure time interests	10	9	7	11	10	8	11	9	8
Provide vocational training	8	8	10	12	5	10	12	8	10
Understand the application of science and mathematics	11	10	11	9	9	11	10	10	12
Develop an understanding of the nature and characteristics of technology	12	12	12	10	12	12	9	12	11

2.2.3 Differences between Current and Ideal Degrees of Emphases

In Table 6, the magnitudes of the differences between the rank order of the means for the current and ideal degrees of emphases on the twelve purposes are shown. The values in the cells were obtained by subtracting the ranks for the means of the current degrees of emphases from the ranks for the means of the ideal degrees of emphases (D=I-C). Differences (D) are shown as a positive (implied) value when the rank for the mean of the ideal degree of emphasis was higher than the rank for the mean of the current degree of emphasis. Differences are shown as a negative (-) value when the rank for the current degree of emphasis was higher than the rank for the ideal degree of emphasis. Therefore, positive values indicate where, in the opinion of the respondents, more emphasis should be placed; negative values indicate where less emphasis should be placed; and a zero or near zero value in either direction indicates the respondents believed the correct amount of emphasis was placed on a given purpose.

There is complete congruence between current and ideal emphasis only in the top-rated purpose. Across all groups and the three samples, the purpose that ranked second as a current emphasis, "providing technical knowledge and skills," was rated considerably lower as an ideal, than as a current emphasis. Developing "worthy leisure time interests" was also rated lower as an ideal purpose than as a current purpose. The purposes, "developing problem-solving skills relating to materials and processes" and "helping students make informed educational and occupational choices" were rated higher as ideal emphases than as current ones. This may suggest that these two purposes are dimensions of industrial arts education that some principals, industrial arts chairpersons, and guidance coordinators feel deserve greater attention.

2.3 VIEWS OF RELATIONSHIP BETWEEN IA AND OTHER EDUCATIONAL PROGRAMS

One reflection of an individual's philosophy of industrial arts education is their concept of the relationship between industrial arts education and other major areas of the public school curriculum. To assess the relationship between industrial arts and other areas of the curriculum, the principals, coordinators, and industrial arts chairpersons were asked with which category of educational programs indus-

TABLE 6

Differences Between Ideal and Current Degree of Emphases on the Purposes of Industrial Arts

PURPOSES OF INDUSTRIAL ARTS	RANDOM SAMPLE			AIASA SAMPLE			EXEMP SAMPLE		
	RESPONDENT			RESPONDENT			RESPONDENT		
	CHP	GUID	PRIN	CHP	GUID	PRIN	CHP	GUID	PRIN
Skill in tools and machines	0	0	0	0	0	0	0	0	0
Make informed educational & occupational choices	3	6	3	3	6	1	3	6	1
Discover and develop creative talent	0	0	0	-2	0	0	-2	1	1
Develop problem-solving skills	3	1	3	1	1	3	2	-1	2
Provide technical knowledge and skills	-3	-4	-3	-4	-4	-1	-5	-2	-3
Provide pre-vocational experiences	0	0	0	1	1	0	1	0	2
Understand technical culture	-1	2	1	2	0	2	3	1	0
Develop consumer knowledge and appreciation	2	0	1	2	1	1	2	0	1
Develop worthy leisure time interests	-6	-4	-3	-4	-4	-3	-6	-2	-3
Provide vocational training	2	-1	-2	0	-1	-4	-1	-4	-1
Understand the application of science and mathematics	1	0	1	2	2	1	2	2	0
Develop an understanding of the nature and character of technology	-1	0	-1	-1	-2	-1	1	-2	0

trial arts was most nearly allied. The choices offered were general education, college preparatory programs, preparation for vocational-technical education, and vocational-technical education. Respondents were asked to mark only one response. In Table 7, the principals' choices are shown. The only two categories chosen by principals were general education and preparation for vocational-technical education. No responses were received from the principals that indicated that they thought industrial arts was allied with college preparatory or vocational-technical education. The differences across the samples were quite small, although general education was selected with less frequency by principals in the exemplary sample than by those in the random and AIASA samples.

The responses of the guidance coordinators to this question (see Table 8) were similar to those of the principals, with a slightly smaller percentage of coordinators choosing the general education category. Again, the differences across the samples were small, with a smaller percentage of exemplary sample coordinators selecting the general education category. Guidance coordinators also selected vocational-technical education, as contrasted to preparation for vocational-technical education, with noteable frequency (17.3% to 22.4%) across the three samples. None of the guidance coordinators selected the college preparatory category.

Industrial arts chairpersons (see Table 9) held a broader view of industrial arts in relationship to other school curricula than did principals, with all four categories being chosen at least once. In this way, the chairpersons' responses were similar to those of the guidance coordinators. In the weights that they attached to the various categories, however, the chairpersons were more similar to the principals, since they most frequently indicated that general education was the area most nearly allied with industrial arts education. As had the guidance coordinators, a small percentage (10.2% to 14.6%) of the chairpersons felt that industrial arts was more nearly allied with vocational education than general education. A negligible percentage (less than 1%) of the chairpersons indicated that they thought industrial arts was most neally allied with the college preparatory category. Again, differences across the samples were small, indicating agreement among the random, AIASA, and exemplary groups.

TABLE 7

Views of Principals on Relationship Between IA and Other Programs

In your opinion, industrial arts is most nearly allied with which one of the following categories?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMPLARY SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
General education	318	44.2	55.4	158	44.8	53.7	77	40.3	49.4
College preparatory	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
Preparation for voc-tech ed	256	35.6	44.6	136	38.5	46.3	79	41.4	50.6
Voc-tech ed	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
missing	145	20.2	-	59	16.7	-	35	18.3	-
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

2.4 OPINIONS OF IA CHAIRPERSONS ON ACCOMMODATING STUDENTS WITH SPECIAL NEEDS

With increasing emphasis on accommodating special-needs students in "regular" classrooms, industrial arts teachers are expressing concerns about the potential problems inherent in such a move in their curriculum area. Industrial arts chairpersons were asked (see Table 10) which of several categories of special-needs students should be accommodated in industrial arts. The respondents were asked to select as many of the twelve categories as applied.

The four most frequently marked categories were: (1) disadvantaged, (2) mentally gifted and talented, (3) speech-impaired, and (4) hard of hearing. These categories were selected by two-thirds or more of all respondents. The two categories receiving the fewest positive responses (21% or less) were "seriously emotionally disturbed" and "deaf-blind." Students with such severe problems might pose serious safety problems in an industrial arts laboratory setting, and could also require special equipment and staffing for their protection.

TABLE 8

Views of Coordinators on Relationship Between IA and Other Programs

In your opinion, industrial arts is most nearly allied with which one of the following categories?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMPLARY SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
General education	278	38.7	42.1	135	38.2	41.7	70	36.6	41.2
College preparatory	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
Preparation for voc-tech ed	263	36.6	39.8	132	37.4	40.7	62	32.5	36.5
Voc-tech ed	120	16.7	18.2	56	15.9	17.3	38	19.9	22.4
missing	58	8.1	-	29	8.2	-	21	11.0	-
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

Differences across the samples ranged from 3.7% to 16.6% for a given category and the percentage of positive responses from respondents in the exemplary sample was greater than that from the random or AIASA sample respondents for most categories. The AIASA sample tended to have the lowest percentages of positive responses. This may indicate a somewhat greater acceptance of special-needs students in exemplary sample schools than in the other schools.

2.5 VIEWS OF COORDINATORS ON COLLEGE-BOUND STUDENTS TAKING INDUSTRIAL ARTS

In the past, guidance coordinators were criticized by some for having a lack of understanding of industrial arts (and its value for all students) and also for counseling students with low academic abilities into industrial arts and students with high abilities away from industrial arts courses. To shed more light on this issue, guidance coordinators were asked (see Table 11) if college-bound students should

TABLE 9

Views of IA Chairpersons on Relationship Between IA and Other Programs

In your opinion, industrial arts is most nearly allied with which one of the following categories?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMPLARY SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
General eduction	346	48.1	53.6	145	41.1	45.9	86	45.0	50.3
College preparatory	1	0.1	0.2	2	0.6	0.6	0	0.0	0.0
Preparation for voc tech ed	232	32.3	36.0	123	34.8	38.9	66	34.6	38.6
Voc tech ed	66	9.2	10.2	46	13.0	14.6	20	10.5	10.5
missing	74	10.3	-	37	10.5	-	20	10.5	-
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

take industrial arts courses. None of the coordinators in the three samples who responded expressed the view that college-bound students should not take industrial arts courses. Section 4.7, which includes data on the academic abilities of students, contains additional data relevant to this topic.

2.6 VIEWS ON INCLUDING INDUSTRIAL ARTS IN ELEMENTARY SCHOOL PROGRAMS

While the role of industrial arts in the elementary school was not a part of this study, the opinions of professionals on this matter were considered to be important to the improvement of the current status of industrial arts. Principals and industrial arts chairpersons were asked (see Table 12 and Table 13) if industrial arts should be a part of elementary school programs. A positive view towards the inclusion of industrial arts in elementary schools was considered as support for the general education role of industrial arts that was cited in previous sections. The principals' responses were nearly evenly divided between "yes," "no," and "no opinion" (see Table 12). These responses

TABLE 10

Views of Chairpersons on Accommodating Students with Special Needs in Industrial Arts

Which of the following special-needs students should industrial arts accommodate?

SPECIAL NEEDS STUDENTS THAT SHOULD BE IN IA	RANDOM SAMPLE N= 634		AIASA SAMPLE N= 321		EXEMPLARY SAMPLE N= 167	
	N OF IA CHP	% OF IA CHP	N OF IA CHP	% OF IA CHP	N OF IA CHP	% OF IA CHP
Hard of hearing	481	75.9	219	68.2	134	80.2
Deaf	325	51.3	138	43.0	93	55.7
Visually handi-capped	180	28.4	94	29.3	76	45.5
Deaf-blind	98	15.5	52	16.2	32	19.2
Speech impaired	537	84.7	260	81.0	146	87.4
Orthoped-ically impaired	312	49.2	141	43.9	101	60.5
Specific learning disability	437	68.9	211	65.7	119	71.3
Other health impaired	277	43.7	125	38.9	79	47.3
Mentally gifted and talented	557	87.9	294	91.6	151	90.4
Mentally retarded	306	48.3	135	42.1	89	53.3
Seriously emotion-ally disturbed	121	19.1	55	17.1	35	21.0
Disadvan-taged	571	90.1	280	87.2	156	93.4

TABLE 11

Views of Guidance Coordinators on College-Bound Students Taking Industrial Arts

In your opinion, should college-bound students take industrial arts courses?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMPLARY SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
Yes	644	89.6	100.0	313	88.7	100.0	170	89.0	100.0
No	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
missing	75	10.4	-	40	11.3	-	21	11.0	-
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

indicate a diversity of opinion among secondary principals concerning the place of industrial arts in elementary schools. There were, however, slightly larger percentages of positive rather than negative responses across the samples.

The responses of chairpersons (see Table 13) indicated a stronger disposition towards the inclusion of industrial arts courses in the elementary schools in their districts. Approximately two-thirds of the random sample, three-fourths of the AIASA sample, and four-fifths of the exemplary sample chairpersons answered positively. The difference between this response and the response of the principals may be attributable to the different perspective of the industrial arts educators. It should be noted, however, that the questions asked the two groups were not identical. The principals were asked whether industrial arts education should be an integral part of elementary education, while the chairpersons were asked simply whether industrial arts courses should be offered in the elementary schools. Almost 40% of the principals replied positively to the inclusion of industrial arts in the elementary school, but it is possible that there may be more support among secondary principals for extending industrial arts education into the elementary schools than the data would indicate.

TABLE 12

Views of Principals on Industrial Arts Being an Integral Part of the Elementary School Program?

In your opinion, should industrial arts be an integral part of elementary schools programs?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMP SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
Yes	269	37.4	39.6	146	41.4	43.3	71	37.2	39.0
No	221	30.7	32.5	123	34.8	36.5	59	30.9	32.4
No opinion	190	26.4	27.9	68	19.3	20.1	52	27.2	28.6
missing	39	5.4	-	16	4.5	-	9	4.7	-
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

TABLE 13

Views of Chairpersons on Industrial Arts Being Offered in Elementary Schools in Their District

In your opinion, should industrial arts be offered in elementary schools in your district?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMP SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
Yes	438	60.9	68.1	243	38.8	74.3	137	71.7	80.6
No	205	28.5	31.9	84	23.8	25.7	33	17.3	19.4
missing	76	10.6	-	26	7.4	-	21	11.0	-
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

Chapter 3

INSTRUCTIONAL PROGRAM FOR INDUSTRIAL ARTS EDUCATION

3.1 INTRODUCTION

A major element of concern in any subject area in the public school is the instructional program. In the past decade, industrial arts has undergone some substantive changes in its course offerings. This chapter provides some explanation of current industrial arts programs. Data on instructional programs are crucial in the development and validation of qualitative standards for the industrial arts profession.

Some of the major topics contained in this chapter are: major characteristics of exemplary programs; representative industrial arts courses taught in 1978-79; the number of industrial arts programs in public secondary schools; and the predominant grade levels at which industrial arts courses are offered and required. The amount of career information teachers provide to students who are taking industrial arts classes is discussed. Data are presented on counseling and on the preparation of individualized education programs (IEP) for handicapped students. Finally, the relationship between industrial arts programs and student club activities is discussed.

3.2 INDUSTRIAL ARTS AT THE STATE/TERRITORIAL LEVEL

State-level supervisory personnel who are responsible for the development and maintenance of industrial arts programs are recognized as having great potential to direct changes in industrial arts. The leadership that can be exercised from state-level positions can help determine the quantity and quality of programs. The following three subsections discuss the numbers of state and territorial and-level personnel employed in 1978-79, the numbers that should be employed, and the amount of state-level plannning in industrial arts.

3.2.1 State Supervisory Staff for Industrial Arts

State supervisors of industrial arts were asked to report how many Full-Time Equivalent (F.T.E.) supervisory personnel were employed for industrial arts at the state or territorial level. In the forty-five states for which data were reported, a total of 54.7 F.T.E. supervisors were employed. On the average, 1.22 F.T.E. supervisors were employed per state. As would be expected from differences in populations in the states, there were some large variations (standard deviation = 1.72) in the number of supervisors who were employed. Four out of the forty-five states that responded indicated there was no supervisor for industrial arts in the state. Seven states indicated a supervisor was employed less than full time (one at 0.6 F.T.E., four at 0.5 F.T.E., one at 0.3 F.T.E., and one at .25 F.T.E.). The largest number of supervisors (nine) were employed in California, which also reported having the largest number of teachers.

State supervisory personnel were also asked to indicate how many F.T.E. supervisory personnel for industrial arts they thought <u>should be</u> employed in their state or territory. The average number given by the forty-five states that responded was 3.98, with a range of one to twenty (standard deviation = 4.30). The general concensus of opinion was that more supervisors were needed, with respondents from the forty-five states indicating a need for 179 state-level supervisors instead of the 54.7 F.T.E. who were employed.

3.2.2 Master Plans for the Scope and Sequence of Industrial Arts Courses

Table 14 contains a breakdown of the responses by individual states and territories regarding the existence of master plans for the scope and sequence of industrial arts courses. As shown in the table, there were twenty-eight state and territorial supervisors who said their state had a master plan for the scope and sequence of industrial arts. Nineteen supervisors reported their state or territory did not have a master plan. Of those supervisors who reported that their states had a master plan, fourteen indicated the plan included student club activities. Of the nineteen state and territorial supervisors who reported that they did not have a master plan, nine reported that they planned to develop one in the next three years; nine reported they did not plan to develop one in the next three years.

TABLE 14

State Plans for the Scope and Sequence of Industrial Arts Courses

STATE	Does the state/territory have a master plan for the scope and sequence of ind. arts?	If there is a plan, does it or any other plan include student club activities?	If there is no state plan, are there plans to develop one in the next three years?
AL	Yes	No	na
AK	No	na	No
AZ	No	na	Yes
AR	No	na	No
CA	Yes	Yes	na
CO	Yes	Yes	na
CT	No	na	.
DE	Yes	Yes	na
DC	No	na	Yes
FL	Yes	Yes	na
GA	Yes	Yes	na
HA	Yes	No	na
ID	Yes	Yes	na
IL	Yes	Yes	na
IN	Yes	Yes	na
IA	Yes	.	na
KY	Yes	No	na
LA	No	na	Yes
MD	Yes	No	na
MA	.	.	.
MI	No	na	No
MN	No	na	No
MS	Yes	Yes	na
MO	Yes	No	na
MT	Yes	No	na
NE	No	na	No
NV	No	na	No
NH	No	na	No
NJ	No	na	Yes
NM	No	na	Yes
NY	Yes	Yes	na
NC	Yes	.	na
ND	Yes	Yes	na
OH	.	.	.
OK	Yes	Yes	na
OR	No	na	No
PA	No	na	Yes
PR	Yes	No	na
SC	Yes	.	na
SD	.	.	.
TN	Yes	Yes	na
TX	Yes	No	na
UT	Yes	No	na
VT	Yes	No	na
VA	Yes	Yes	na
WA	No	na	Yes
WV	No	na	Yes
WI	No	na	No
WY	No	na	Yes
VI	Yes	No	na
TOTALS			
YES	28	14	9
NO	19	11	9

Note - The character "." represents missing data.

3.2.3 Inclusion of Industrial Arts in State Vocational Education Plans

When the state or territorial industrial arts supervisors were asked whether their state plan for vocational education included provisions to cover industrial arts courses, forty supervisors reported there were provisions for industrial arts. Five states reported there were no such provisions. Five states did not report any data at all. Table 15 shows that of the five states that reported industrial arts was not included in their state vocational plan, two indicated they anticipated such an inclusion within the next three years (1979-81).

3.3 MAJOR CHARACTERISTICS OF EXEMPLARY PROGRAMS

State Supervisors were asked to characterize exemplary programs in industrial arts. The format for this question was open-ended, allowing each state supervisor to provide their own list of characteristics. From the responses, the three major characteristics of an exemplary program (in rank order) were: (1) having a dedicated and prepared industrial arts teacher, (2) having a well-equipped laboratory, and (3) using a variety of effective teaching methods. The total list of responses is shown in Table 16. Twelve other characteristics were also mentioned by one or more supervisors. Three of the fifteen characteristics are related to funding, which is treated more fully in Chapter 8. Five of the characteristics are related to the nature of the instructional program, which is described in this chapter. Chapter 6 contains more data on the most frequently cited characteristic, "having a dedicated and prepared teacher."

3.4 INDUSTRIAL ARTS COURSES TO BE ADDED/DELETED

Data regarding industrial arts courses in the instructional program are presented in this section. Courses that are planned for addition at the state level by 1981, courses planned for addition at the local level by 1984, and courses that are planned for deletion at the state level by 1981 are described in the following subsections.

TABLE 15

Inclusion of Industrial Arts in State/Territorial Plan for Vocational Education, Reported by Supervisors

STATE	Do provisions in the state or territorial plan for vocational education cover industrial arts courses?	If no, are there plans for inclusion in the state or territorial plan within the next three years?
ALABAMA	Yes	na
ALASKA	Yes	na
ARIZONA	Yes	na
ARKANSAS	Yes	na
CALIFORNIA	Yes	na
COLORADO	Yes	na
CONNECTICUT	Yes	na
DELAWARE	Yes	na
DIST OF COL	Yes	na
FLORIDA	Yes	na
GEORGIA	Yes	na
HAWAII	No	No
IDAHO	Yes	na
ILLINOIS	Yes	na
INDIANA	.	.
IOWA	Yes	na
KENTUCKY	Yes	na
LOUISIANA	Yes	na
MARYLAND	Yes	na
MASSACHUSETTS	Yes	na
MICHIGAN	Yes	na
MINNESOTA	Yes	na
MISSISSIPPI	Yes	na
MISSOURI	.	Yes
MONTANA	Yes	na
NEBRASKA	No	.
NEVADA	Yes	na
NEW HAMPSHIRE	.	.
NEW JERSEY	Yes	na
NEW MEXICO	Yes	na
NEW YORK	No	.
NORTH CAROLINA	Yes	na
NORTH DAKOTA	Yes	na
OHIO	.	.
OKLAHOMA	Yes	na
OREGON	Yes	na
PENNSYLVANIA	Yes	na
PUERTO RICO	No	No
SOUTH CAROLINA	Yes	na
SOUTH DAKOTA	.	.
TENNESSEE	Yes	na
TEXAS	Yes	na
UTAH	Yes	na
VERMONT	Yes	na
VIRGINIA	Yes	na
WASHINGTON	Yes	na
WEST VIRGINIA	Yes	na
WISCONSIN	Yes	na
WYOMING	Yes	na
VIRGIN ISLANDS	No	Yes
TOTALS		
YES	40	2
NO	5	2

Note - The character "." represents missing data.

TABLE 16

Description of Characteristics of an Exemplary Program by State Supervisors

In your opinion, what are the major characteristics of an exemplary program in industrial arts?

N=41

COMMENTS	FREQ	COMMENTS	FREQ
Dedicated and prepared industrial arts teacher	12	Written course objectives	3
Well-equipped laboratory	10	Incorporates innovative ideas and materials	2
Use variety of effective teaching methods	6	Low student/teacher ratio	2
Well-rounded curriculum	5	Adequate supplies	2
Relevant to industry	5	Content related to future	2
Occupationally oriented	5	Competency based	2
Student club/organization	5	Well-developed pupil personnel system	1
Adequate funds	4		

3.4.1 IA Courses Planned to be Added by 1981 at State Level

Table 17 lists the industrial arts courses that are planned for addition to the curriculum over the three-year period, 1979-81, as reported by state supervisors. Power and energy was listed considerably more often than any of the other courses. The probable reason for this is the high visibility given to energy during the late 1970's. Typically, power and energy courses include the study of energy sources, conversion, transmission, and utilization. Such topics are timely and appropriate for youth in the coming decade. Other new course offerings named were communications technology, materials processing, transportation, and construction. All of these listings indicate a trend toward offering more innovative, rather than traditional, industrial arts courses. It is important to note that eleven states planned to offer no new industrial arts courses in the next three years. This may be because the more innovative courses had already been adopted in a given state.

TABLE 17

New IA Courses Planned for Implementation, Reported by State Supervisors

List (by title) all new industrial arts courses that are planned for implementation by your state or territorial agency within the next three years.

N=50

NAME OF COURSES	FREQ	NAME OF COURSES	FREQ
Power and energy	13	Construction drafting	1
Communications technology	4	Metal technology	1
Materials processing	4	Plastics technology	1
Transportation	2	Electronics	1
Construction	2	Home maintenance	1
Computer literacy	1	Consumer automotives	1
Occupational orientation	1	Elementary industrial arts	1
Design drafting	1		
No courses planned to be implemented	11	Data not available	19

3.4.2 Industrial Arts Courses to be Added by 1984 in Survey Sample Schools

The industrial arts chairpersons were asked what additional industrial arts courses they thought would be offered in their schools in five years (1984). Their responses are shown in Table 18. In the random sample the four courses most frequently listed by chairpersons, in descending order, were (1) plastics, (2) graphic arts, (3) electricity, and (4) general metals. In the AIASA sample, the new courses reported were (1) graphic arts, (2) plastics, and (3) tied for third, electricity and photography. The responses from the exemplary sample chairpersons were similar to those from the other two samples: (1) plastics, (2) power mechanics, (3) electricity-electronics, and (4) graphic arts. The industrial arts courses that apparently will be added by the fewest (less than 1%) schools during the next five years are: textiles, drafting technology, industrial materials, instrumen-

tation, numerical control, and other courses in metals and plastics which were not listed by specific course titles.

While the three samples showed numerous differences in course listings, one of the more obvious differences was for architectural drafting, which will be offered more in the future by the random sample schools than by schools in the other two samples. These schools also indicated that electricity will not be added as frequently in the future as the AIASA and exemplary schools indicated that it would be. Graphic arts was one of the new courses to be offered in one out of five AIASA sample schools in the next five years. Power mechanics was named by approximately one out of ten exemplary sample schools as a new course offering, and was reported by slightly fewer schools in the random and AIASA samples as a new course for the 1980's.

3.4.3 IA Courses Planned to be Deleted by 1981 at State Level

Table 19 contains the industrial arts courses state supervisors indicated were planned to be deleted sometime between 1979 and 1981. The low number of responses in each category should be pointed out in making generalizations. Twenty-six state supervisors reported that no courses were to be deleted. As with the previous question (Section 3.4.2), a large number (13) of the supervisors indicated the data requested were not available. Graphic arts was cited by three supervisors as being deleted. From the low number of responses in each category, it appears that relatively few industrial arts courses will be dropped by states in the next few years. However, in comparing the data in Table 19 with those in Table 18, it is clear that some of the more traditional courses in industrial arts are planned to be phased out of the instructional program, while more innovative courses are planned for addition.

The relatively high incidence of graphic arts in the list of courses to be added in the schools surveyed causes the outlook for graphic arts courses to be slightly unpredictable, when the responses of supervisors are considered.

TABLE 18

Additional IA Courses to be Offered in Five Years, Reported by Chairpersons

What additional industrial arts courses do you believe will be offered in your school five years from now?

UNIT LABS	RANDOM SAMPLE N= 336		AIASA SAMPLE N= 208		EXEMP SAMPLE N= 101	
	COUNT	% CASES	COUNT	% CASES	COUNT	% CASES
Construction	19	5.7	12	5.8	8	7.9
Art metals	8	2.4	2	1.0	1	1.0
Ceramics	11	3.3	6	2.9	2	2.0
Crafts	8	2.4	11	5.3	2	2.0
Industrial crafts	7	2.1	8	3.8	0	0.0
Leather	19	5.7	7	3.4	8	7.9
Textiles	1	0.3	0	0.0	0	0.0
Jewelry/lapidary	10	3.0	3	1.4	4	4.0
Other industrial crafts	2	0.6	2	1.0	2	2.0
Architectural drafting	37	11.0	19	9.1	8	7.9
Descriptive geometry	4	1.2	3	1.4	0	0.0
Drafting	20	6.0	22	10.6	5	5.0
Drafting technology	1	0.3	1	0.5	2	2.0
Engineering drawing	5	1.5	4	1.9	3	3.0
Industrial design	4	1.2	2	1.0	0	0.0
Mechanical drawing	19	5.7	7	3.4	3	3.0
Technical illustration	3	0.9	5	2.4	3	3.0
Other drafting	5	1.5	4	1.9	2	2.0
Electricity	46	13.7	27	13.0	7	6.9
Electricity-electronics	30	8.9	26	12.5	12	11.9
Electronics	12	3.6	6	2.9	1	1.0

Continued

Table 18 continued.

Other electricity-electronics	5	1.5	6	2.9	5	5.0
General industrial arts	11	3.3	6	2.9	8	7.9
Graphic arts	50	14.9	41	19.7	11	10.9
Photography	37	11.0	27	13.0	5	5.0
Photolithography	4	1.2	3	1.4	2	2.0
Printing	8	2.4	8	3.8	2	2.0
Communications technology	16	4.8	18	8.7	6	5.9
Other graphic arts	6	1.8	8	3.8	3	3.0
General home mechanics	22	6.5	10	4.8	9	8.9
Fluid power	1	0.3	4	1.9	3	3.0
Industrial materials	2	0.6	0	0.0	1	1.0
Industrial materials and processes	14	4.2	11	5.3	5	5.0
Industrial processes	4	1.2	1	0.5	1	1.0
Instrumentation	0	0.0	0	0.0	1	1.0
Numerical control	1	0.3	1	0.5	1	1.0
Other industrial materials and processes	3	0.9	1	0.5	1	1.0
Manufacturing	27	8.0	24	11.5	5	5.0
Production technology	5	1.5	4	1.9	3	3.0
General metals	39	11.6	24	11.5	9	8.9
Metal machining	11	3.3	8	3.8	2	2.0
Metal technology	6	1.8	3	1.4	1	1.0
Sheet metal	9	2.7	6	2.9	1	1.0
Welding	20	6.0	18	8.7	4	4.0
Foundry	11	3.3	9	4.3	0	0.0
Other metals	3	0.9	0	0.0	0	0.0
Plastics	60	17.9	30	14.4	17	16.8
Plastics technology	16	4.8	7	3.4	5	5.0
Other plastics	1	0.3	0	0.0	1	1.0

continued

Table 18 continued.

Automotive mechanics	31	9.2	14	6.7	5	5.0
Power-automotive mechanics	13	3.9	4	1.9	5	5.0
Power mechanics	30	8.9	22	10.6	13	12.8
Transportation	6	1.8	5	2.4	3	3.0
Power-transportation	8	2.4	15	7.2	5	5.0
Other power-automotive mech	12	3.6	2	1.0	2	2.0
Research and development	7	2.1	13	6.3	6	6.0
Service industry	8	2.4	2	1.0	4	4.0
General woods	11	3.0	11	5.3	2	2.0
Woods technology	13	3.9	7	3.4	1	1.0
Other woods	6	1.8	7	3.4	4	4.0
American industry	12	3.6	11	5.3	1	1.0
Exploring technology	14	4.2	5	2.4	6	6.0
Finishing material/methods	6	1.8	0	0.0	0	0.0
Other industrial arts	15	4.5	13	6.3	6	6.0

3.5 NUMBER OF SCHOOLS WITH INDUSTRIAL ARTS PROGRAMS

This section presents data from state and territorial supervisors on the number of schools that had industrial arts courses. The data displayed in Table 20 show that there were 20,230 total secondary schools in the forty-one states and territories reporting. Of these schools, 15,315 had industrial arts programs. This indicates that 78.6% of the secondary schools in the forty-one states that reported data had industrial arts programs.

TABLE 19

Courses Planned to be Deleted by 1981 at State Level, Reported by Supervisors

List (by title) all new industrial arts courses that are planned to be deleted by your state or territorial agency within the next three years.

N=47

NAME OF COURSES	FREQ	NAME OF COURSES	FREQ
Graphic arts	3	Transportation	1
Electricity/Electronics	2	Research and Development	1
Woodworking (advanced)	2	Drawing (advanced)	1
Plastics	2	Power Technology	1
Metalworking (unit lab)	2	Ceramics	1
Aviation	1	Industrial Arts Exploration	1
Arts and Crafts	1		
No courses planned to be deleted	26	Data not available	13

In the thirty-five states that reported data, 15.8% of the secondary schools that had industrial arts programs received federal funds for industrial arts. Supervisors from Washington, D.C. and Tennessee indicated all their secondary schools with industrial arts received federal monies for industrial arts. Fifteen states reported that none of their secondary schools that had industrial arts programs received federal monies. The whole topic of finances in industrial arts is discussed more fully in Chapter 8.

There were fourteen states and territories (California, Connecticut, Delaware, Hawaii, Massachusetts, Nevada, New Jersey, New York, Ohio, Pennsylvania, Vermont, Wisconsin, Wyoming, and the Virgin Islands) that reported that all of their secondary schools had industrial arts programs. Those states reporting the lowest percentages of schools with industrial arts courses were Alabama (18%), Arkansas (25%), Oklahoma (29%), and South Carolina (34%).

TABLE 20

Secondary Schools, Secondary Schools with IA Courses, Schools with Federally Funded IA Courses, by State for 1978-79

STATES	TOTAL SECONDARY SCHOOLS	SECONDARY SCHOOLS WITH IA	PROPORTION OF SECONDARY SCHOOLS WITH IA	SECONDARY SCHOOLS THAT RECEIVE FEDERAL FUNDS FOR IA COURSES	PROPORTION OF SCHOOLS WITH IA THAT RECEIVE FEDERAL
AL	462	81	0.18	45	0.56
AK	103	90	0.87	4	0.04
AZ	144	129	0.90	.	.
AR	400	100	0.25	50	0.50
CA	1094	1094	1.00	215	0.20
CO	469	400	0.85	0	0.00
CT	348	348	1.00	.	.
DE	67	67	1.00	10	0.15
DC	49	32	0.65	32	1.00
FL	477	438	0.92	.	.
GA	368	244	0.66	165	0.68
HA	37	37	1.00	0	0.00
ID	190	151	0.79	35	0.23
IL	759	620	0.82	.	.
IN	371	369	0.99	0	0.00
IA	459	745	1.62	11	0.01
KY	327	185	0.57	75	0.41
LA	350	315	0.90	.	.
MD	297	284	0.96	5	0.02
MA	348	348	1.00	.	.
MI	530	.	.	.	.
MN	650	635	0.98	0	0.00
MS	*275	*158	0.57	*226	*1.43
MO	456	411	0.90	0	0.00
MT	172	132	0.77	0	0.00
NE	450	251	0.56	.	.
NV	55	55	1.00	0	0.00
NH	.	.	.	.	.
NJ	720	720	1.00	50	0.07
NM	207	162	0.78	0	0.00
NY	1183	1183	1.00	.	.
NC	.	82	.	0	0.00
ND	251	142	0.57	42	0.30
OH	1159	1159	1.00	0	0.00
OK	842	247	0.29	0	0.00
OR	236	220	0.93	0	0.00
PA	989	989	1.00	9	0.01
PR	384	130	0.34	0	0.00
SC	202	.	.	.	.
SD	.	.	.	.	.
TN	473	300	0.63	300	1.00
TX	2198	1095	0.50	0	0.00
UT	.	.	.	0	.
VT	72	72	1.00	0	0.00
VA	491	441	0.90	403	0.91
WA	317	.	.	0	.
WV	331	186	0.56	24	0.13
WI	384	384	1.00	331	0.86
WY	76	76	1.00	15	0.20
VI	8	8	1.00	3	0.38
TOTALS	20230	15315	**	2050	***
N	46	44		38	

The character, ".", represents no data reported.

*Note that value for proportion exceeds 1.0 (data shown as reported).
**Percentage of secondary schools with IA: 78.6%, N=41.
***Percentage schools with IA receiving federal funds: 28.85%, N= 20.

3.6 INDUSTRIAL ARTS CURRICULUM GUIDES TO BE DEVELOPED FROM 1979 TO 1981

One indicator of future curriculum direction is the development of curriculum guides in states. Table 21 shows the results of the forty-eight state supervisors' responses to the question about what curriculum guides are planned. Note that the planned curriculum guides second most frequently listed (after general curriculum guides for the whole curriculum) were for the two areas of transportation/power/energy and communications technology. In all, thirty-seven states each had one or more guides planned. When the results in Table 21 are compared to the data on new industrial arts courses planned, a strong similarity in responses is evident. It appears that many of those states planning new courses were also in the process of developing new curriculum guides for those courses. Eight states indicated no new curriculum guides were to be developed; three states indicated no information was available on the development of curriculum guides.

3.7 PREDOMINANT GRADE LEVEL OF REPRESENTATIVE INDUSTRIAL ARTS COURSES TAUGHT IN 1978-79

Data regarding the predominant grade level of representative industrial arts courses taught in 1978-79 and the grade levels at which industrial arts was required are presented in this section. The industrial arts chairperson was asked to list, by grade level, up to nine of the courses that most broadly represented courses taught in their school.

The data presented in this section are in separate tables for the random sample, AIASA sample, and exemplary sample. For each sample, the industrial arts courses and the number and percentage of the schools offering these courses at grade levels 6-7, 8-9, and 10-12 are shown. Also, a total is given for all grade levels for each course.

3.7.1 Representative Industrial Arts Courses in Random Sample, by Grade Level

Data regarding the responses in the random sample are shown in Table 22. General woodworking was the most frequently listed course at all grade levels in the random sample. The second most frequently listed course, in grades 6-7 and 8-9, was general industrial arts. At the

TABLE 21

Industrial Arts Curriculum Guides Planned for Development from 1979 to 1981, Reported by Supervisors

List the state or territory curriculum guides in industrial arts planned for development within the next three years.

N=48

NAME OF GUIDES	FREQ	NAME OF GUIDES	FREQ
State curriculum guides for grades K-12	19	Occupational orientation	1
Transportation/power/energy	8	Wood technology	1
Communications technology	5	Plastics technology	1
Fundamentals of drafting	4	General industrial arts	1
Fundamentals of graphic arts	4	Manufacturing	1
Fundamentals of electricity/ electronics	3	Drafting and designing	1
Fundamentals of metals	3	Machine shop	1
Safety	3	Arts and crafts	1
Fundamentals of construction	2	Home mechanics	1
Fundamentals of industrial materials processing	2	Production	1
Wood/plastics	2	Fundamentals of aviation	1
Fundamentals of power mechanics industry	1		
No guides planned	8	Information not available	3

upper secondary grade levels (grades 10-12), the second most frequently listed course was architectural drafting. General metals was listed third in frequency at all grade levels in the random sample. In reviewing all the courses cited in the random sample (grades 6-12), the ten most frequently offered courses in rank order were (1) general woods, (2) general metals, (3) mechanical drawing, (4) general mechanical drawing, (5) drafting, (6) architectural drafting, (7) graphic arts, (8) electricity, (9) automotive mechanics, and (10) woods technology. However, only four of these courses appeared in the ten most frequently cited courses for all grade levels.

3.7.2 Representative Industrial Arts Courses in AIASA Sample, by Grade Level

In the AIASA sample, for grades 6-7 and 8-9 (see Table 23), the course listed with the greatest frequency was general industrial arts. At grade levels 10-12, general woods was the course listed with the greatest frequency. The second most popular course from the AIASA sample for grades 6-7 and 8-9 was general woods. In grades 10-12, the second most popular course in industrial arts was architectural drawing. General metals, drafting, and leather were tied in listings as the third most popular course for grades 6-7 in the AIASA sample, while manufacturing was the third most popular course for grades 8-9, and mechanical drawing was the third most popular course for grades 10-12.

In the total figures from grades 6-12, the course listed with the greatest frequency was general woods. The course listed with the second greatest frequency was general industrial arts Mechanical drawing was listed with the third greatest frequency. The remaining seven of the top ten most frequently cited courses were similar to those in the random sample with noteable exceptions: manufacturing and construction appear in the place of graphic arts and automotive mechanics.

3.7.3 Representative Industrial Arts Courses in Exemplary Sample, by Grade Level

In the exemplary sample, there is inconsistency in the courses listed with the most frequency in grades 6-12. These findings are shown in Table 24. General woods was listed most frequently for grades 6-7 and 10-12, while general industrial arts was the most frequently listed course in grades 8-9. In terms of the second most frequently offered course at grades 6-7, industrial arts and "other" industrial arts were tied. At grades 8-9, general woods was the second most frequently offered course, and at grades 10-12, architectural drawing was the second most frequently offered course in the exemplary sample. The data on the third most frequently offered course at grades 6-7 indicate drafting and electricity were tied. At grades 8-9 and 10-12, general metals was offered with the third highest degree of frequency. The data from the total course offerings in grades 6-12 show that, in the exemplary sample, general woods was the most frequently offered

TABLE 22

Representative IA Courses Taught in Random Sample Schools by Grade, Reported by Chairpersons

COURSE NAME	GRADES 6-7 N	GRADES 6-7 PROP	GRADES 8-9 N	GRADES 8-9 PROP	GRADES 10-12 N	GRADES 10-12 PROP	TOT
CONSTRUCTION	5	0.08	19	0.30	39	0.62	63
ART METALS	2	0.17	3	0.25	7	0.58	12
CERAMICS	6	0.21	9	0.32	13	0.46	28
CRAFTS	3	0.11	12	0.44	12	0.44	27
INDUSTRIAL CRAFTS	3	0.25	3	0.25	6	0.50	12
LEATHER	12	0.26	22	0.47	13	0.28	47
TEXTILES	0	0.00	0	0.00	1	1.00	1
JEWELRY AND LAPIDARY	0	0.00	2	0.22	7	0.78	9
OTHER INDUSTRIAL CRAFTS	0	0.00	1	0.13	7	0.88	8
ARCHITECTURAL DRAFTING	1	0.01	11	0.07	149	0.93	161
DESCRIPTIVE GEOMETRY	0	0.00	0	0.00	2	1.00	2
DRAFTING	18	0.10	68	0.37	96	0.53	182
DRAFTING TECHNOLOGY	2	0.07	3	0.11	22	0.81	27
ENGINEERING DRAWING	1	0.03	4	0.11	32	0.86	37
INDUSTRIAL DESIGN	0	0.00	2	0.33	4	0.67	6
MECHANICAL DRAWING	15	0.07	84	0.37	130	0.57	229
TECHNICAL ILLUSTRATION	0	0.00	0	0.00	4	1.00	4
OTHER DRAFTING	3	0.30	3	0.30	4	0.40	10
ELECTRICITY	21	0.19	41	0.36	51	0.45	113
ELECTRICITY-ELECTRONICS	3	0.04	14	0.17	64	0.79	81
ELECTRONICS	1	0.02	8	0.18	35	0.80	44
OTHER ELECTRICITY-ELECTRONICS	0	0.00	0	0.00	4	1.00	4
GENERAL INDUSTRIAL ARTS	37	0.17	148	0.67	36	0.16	221
GRAPHIC ARTS	14	0.12	28	0.24	73	0.63	115
PHOTOGRAPHY	2	0.05	6	0.16	29	0.78	37
PHOTOLITHOGRAPHY	0	0.00	1	0.08	12	0.92	13
PRINTING	3	0.19	6	0.38	7	0.44	16
COMMUNICATIONS TECHNOLOGY	2	0.17	6	0.50	4	0.33	12
OTHER GRAPHIC ARTS	3	0.30	1	0.10	6	0.60	10
GENERAL HOME MECHANICS	5	0.38	1	0.08	7	0.54	13
FLUID POWER	0	0.00	1	0.25	3	0.75	4
INDUSTRIAL MATERIALS	0	0.00	0	0.00	1	1.00	1
IND MATERIALS AND PROCESSES	0	0.00	8	0.57	6	0.43	14
INDUSTRIAL PROCESSES	0	0.00	0	0.00	1	1.00	1
INSTRUMENTATION	0	0.00	0	0.00	0	0.00	0
NUMERICAL CONTROL	0	0.00	0	0.00	0	0.00	0
OTHER IND MATERIALS AND PROC	0	0.00	0	0.00	2	1.00	2
MANUFACTURING	6	0.13	32	0.70	8	0.17	46
PRODUCTION TECHNOLOGY	0	0.00	2	1.00	0	0.00	2
GENERAL METALS	27	0.10	105	0.39	139	0.51	271
METAL MACHINING	2	0.04	1	0.02	53	0.95	56
METAL TECHNOLOGY	3	0.14	3	0.14	16	0.73	22
SHEET METAL	2	0.11	7	0.37	10	0.53	19
WELDING	5	0.07	9	0.13	55	0.80	69
FOUNDRY	1	0.07	6	0.40	8	0.53	15
OTHER METALS	2	0.25	2	0.25	4	0.50	8
PLASTICS	9	0.18	23	0.46	18	0.36	50
PLASTICS TECHNOLOGY	1	0.20	1	0.20	3	0.60	5
OTHER PLASTICS	1	0.50	1	0.50	0	0.00	2
AUTOMOTIVE MECHANICS	5	0.05	4	0.04	95	0.91	104
POWER-AUTOMOTIVE MECHANICS	4	0.12	1	0.03	29	0.85	34
POWER MECHANICS	8	0.10	29	0.35	47	0.56	84
TRANSPORTATION	0	0.00	1	0.50	1	0.50	2
POWER-TRANSPORTATION	4	0.29	5	0.36	5	0.36	14
OTHER POWER-AUTOMOTIVE	1	0.05	5	0.26	13	0.68	19
RESEARCH AND DEVELOPMENT	1	0.50	0	0.00	1	0.50	2
SERVICE INDUSTRIES	0	0.00	0	0.00	0	0.00	0
GENERAL WOODS	62	0.15	169	0.41	184	0.44	415
WOODS TECHNOLOGY	14	0.15	15	0.16	63	0.68	92
OTHER WOODS	12	0.19	3	0.05	49	0.77	64
AMERICAN INDUSTRY	3	0.20	9	0.60	3	0.20	15
EXPLORING TECHNOLOGY	5	0.42	6	0.50	1	0.08	12
FINISHING MATERIALS AND METHDS	0	0.00	0	0.00	2	1.00	2
OTHER INDUSTRIAL ARTS	17	0.40	11	0.26	15	0.35	43
TOTALS	357		965		1711		3033

course, general metals was the second most frequently offered course, and mechanical drawing was the third most frequently offered course. The seven courses next most often cited were architectural drafting, drafting, general industrial arts, graphic arts, electricity-electronics, construction, and power mechanics.

Further examination of data in the random, AIASA, and exemplary samples indicates that the number of course listings for general woodworking (the most frequently cited course) tend to increase from grade 6 to grade 12. The data also indicate that this occurred in all three samples for general metals and mechanical drawing. In other words, more courses in general metals, general woods, and mechanical drawing were offered in the upper secondary school grades. However, this was not the case with general industrial arts. In all three samples, the greatest frequency of offerings for this course was at grades 8-9, indicating that general industrial arts was most frequently offered towards the later years in junior high school and the beginning years of senior high school. (Refer to Appendix C for the frequencies of the representative courses in each of the seven grade levels.) The data indicate that the courses listed least frequently in all three samples were instrumentation, textiles, numerical control, other plastics, research and development, and service industries.

In conclusion, the most frequently listed representative industrial arts courses taught in the random, AIASA, and exemplary samples in 1978-1979 were general woods, general metals, general industrial arts, mechanical drawing, and architectural drafting. These data, when compared to data collected in 1962-1963 for the Schmitt and Pelley report, show very similar listings of the most frequently named course titles (i.e. general industrial arts, general woods, drafting, and general metals).

3.8 REQUIREMENTS FOR STUDENTS TO ENROLL IN INDUSTRIAL ARTS

Historically, industrial arts has been an elective area in the public schools. In the schools sampled in the survey, the principals were asked whether students were required to enroll in industrial arts

TABLE 23

Representative IA Courses Taught in AIASA Sample Schools by Grade, Reported by Chairpersons

COURSE NAME	GRADES 6-7 N	GRADES 6-7 PROP	GRADES 8-9 N	GRADES 8-9 PROP	GRADES 10-12 N	GRADES 10-12 PROP	TOT
CONSTRUCTION	8	0.11	41	0.59	21	0.30	70
ART METALS	1	0.20	4	0.80	0	0.00	5
CERAMICS	1	0.08	3	0.25	8	0.67	12
CRAFTS	4	0.27	5	0.33	6	0.40	15
INDUSTRIAL CRAFTS	1	0.07	5	0.33	9	0.60	15
LEATHER	9	0.39	10	0.43	4	0.17	23
TEXTILES	0	0.00	0	0.00	0	0.00	0
JEWELRY AND LAPIDARY	0	0.00	1	0.25	3	0.75	4
OTHER INDUSTRIAL CRAFTS	2	1.00	0	0.00	0	0.00	2
ARCHITECTURAL DRAFTING	3	0.04	3	0.04	71	0.92	77
DESCRIPTIVE GEOMETRY	0	0.00	1	1.00	0	0.00	1
DRAFTING	9	0.09	41	0.42	47	0.48	97
DRAFTING TECHNOLOGY	1	0.06	2	0.12	14	0.82	17
ENGINEERING DRAWING	0	0.00	1	0.05	18	0.95	19
INDUSTRIAL DESIGN	0	0.00	1	0.50	1	0.50	2
MECHANICAL DRAWING	6	0.06	28	0.27	70	0.67	104
TECHNICAL ILLUSTRATION	0	0.00	1	0.17	5	0.83	6
OTHER DRAFTING	2	0.22	2	0.22	5	0.56	9
ELECTRICITY	6	0.13	23	0.51	16	0.36	45
ELECTRICITY-ELECTRONICS	2	0.05	11	0.25	31	0.70	44
ELECTRONICS	0	0.00	0	0.00	11	1.00	11
OTHER ELECTRICITY-ELECTRONICS	0	0.00	0	0.00	1	1.00	1
GENERAL INDUSTRIAL ARTS	24	0.20	79	0.65	19	0.16	122
GRAPHIC ARTS	5	0.13	6	0.15	28	0.72	39
PHOTOGRAPHY	5	0.17	7	0.24	17	0.59	29
PHOTOLITHOGRAPHY	1	0.33	2	0.67	0	0.00	3
PRINTING	2	0.22	3	0.33	4	0.44	9
COMMUNICATIONS TECHNOLOGY	1	0.07	6	0.40	8	0.53	15
OTHER GRAPHIC ARTS	1	0.33	0	0.00	2	0.67	3
GENERAL HOME MECHANICS	2	0.07	12	0.40	16	0.53	30
FLUID POWER	0	0.00	2	0.67	1	0.33	3
INDUSTRIAL MATERIALS	0	0.00	0	0.00	0	0.00	0
IND MATERIALS AND PROCESSES	0	0.00	3	0.38	5	0.63	8
INDUSTRIAL PROCESSES	0	0.00	0	0.00	0	0.00	0
INSTRUMENTATION	0	0.00	0	0.00	0	0.00	0
NUMERICAL CONTROL	0	0.00	0	0.00	0	0.00	0
OTHER IND MATERIALS AND PROC	0	0.00	0	0.00	1	1.00	1
MANUFACTURING	5	0.07	44	0.66	18	0.27	67
PRODUCTION TECHNOLOGY	0	0.00	3	0.60	2	0.40	5
GENERAL METALS	9	0.09	24	0.25	64	0.66	97
METAL MACHINING	0	0.00	3	0.17	15	0.83	18
METAL TECHNOLOGY	1	0.07	2	0.13	12	0.80	15
SHEET METAL	1	0.14	3	0.43	3	0.43	7
WELDING	2	0.13	2	0.13	12	0.75	16
FOUNDRY	0	0.00	1	0.25	3	0.75	4
OTHER METALS	0	0.00	2	1.00	0	0.00	2
PLASTICS	3	0.25	6	0.50	3	0.25	12
PLASTICS TECHNOLOGY	1	0.17	0	0.00	5	0.83	6
OTHER PLASTICS	0	0.00	0	0.00	0	0.00	0
AUTOMOTIVE MECHANICS	3	0.19	2	0.13	11	0.69	16
POWER-AUTOMOTIVE MECHANICS	0	0.00	1	0.13	7	0.88	8
POWER MECHANICS	3	0.08	24	0.65	10	0.27	37
TRANSPORTATION	0	0.00	3	1.00	0	0.00	3
POWER-TRANSPORTATION	1	0.06	8	0.47	8	0.47	17
OTHER POWER-AUTOMOTIVE	1	0.20	2	0.40	2	0.40	5
RESEARCH AND DEVELOPMENT	0	0.00	0	0.00	0	0.00	0
SERVICE INDUSTRIES	0	0.00	0	0.00	0	0.00	0
GENERAL WOODS	18	0.11	64	0.39	82	0.50	164
WOODS TECHNOLOGY	4	0.08	9	0.18	37	0.74	50
OTHER WOODS	2	0.09	3	0.14	17	0.77	22
AMERICAN INDUSTRY	6	0.21	22	0.76	1	0.03	29
EXPLORING TECHNOLOGY	3	0.27	6	0.55	2	0.18	11
FINISHING MATERIALS AND METHDS	2	1.00	0	0.00	0	0.00	2
OTHER INDUSTRIAL ARTS	8	0.26	13	0.42	10	0.32	31
TOTALS	169		550		766		1285

courses. A large majority of the principals in all three samples indicated industrial arts courses were not required in their schools. As illustrated in Part 1 of Table 25, the smallest percentage of schools requiring students to take industrial arts courses was in the AIASA sample (14.2%), with larger percentages of the random (33.3%) and exemplary (25.8%) sample requiring industrial arts.

In those schools where industrial arts was required, principals indicated at what grade level(s) it was required. Their responses which are shown in Table 25, Part 1, indicate the seventh and eighth grades were most frequently the levels at which industrial arts was required in all three samples. Few principals in the three samples reported that industrial arts was required in the sixth grade or above grade ten. The frequency of references to industrial arts being required at the seventh and eighth grade levels was not a function of a larger number of junior high schools in the samples.

3.9 VIEWS OF PRINCIPALS ON INDUSTRIAL ARTS BEING REQUIRED FOR ALL STUDENTS

The requirement that industrial arts courses should be taken by all students can be viewed as an indication of strong belief that industrial arts is a part of general education for all youth. As noted in the previous section, one-third or less of the principals (see Table 26) said their schools required any industrial arts courses. Similarly, fewer than one-third of the principals in all three samples (see Table 26) said they thought their schools should require industrial arts for all students. However, in the AIASA sample (see Table 25), 14.2% of the principals reported that industrial arts was required in their school. As shown in Table 26, 21.3% of those same principals indicated industrial arts should be required for all students. In all three samples the majority of principals stated that industrial arts was not and should not be a required course for all students in their schools. This, even though as reported in Chapter 2, principals also said they felt industrial arts is allied with general education.

TABLE 24

Representative IA Courses Taught in Exemplary Sample Schools by Grade, Reported by Chairpersons

COURSE NAME	GRADES 6-7 N	GRADES 6-7 PROP	GRADES 8-9 N	GRADES 8-9 PROP	GRADES 10-12 N	GRADES 10-12 PROP	TOT
CONSTRUCTION	4	0.11	16	0.44	16	0.44	36
ART METALS	0	0.00	0	0.00	3	1.00	3
CERAMICS	2	0.29	0	0.00	5	0.71	7
CRAFTS	1	0.13	4	0.50	3	0.38	8
INDUSTRIAL CRAFTS	5	0.50	2	0.20	3	0.30	10
LEATHER	1	0.50	0	0.00	1	0.50	2
TEXTILES	0	0.00	0	0.00	1	1.00	1
JEWELRY AND LAPIDARY	0	0.00	1	0.50	1	0.50	2
OTHER INDUSTRIAL CRAFTS	0	0.00	0	0.00	4	1.00	4
ARCHITECTURAL DRAFTING	0	0.00	2	0.04	50	0.96	52
DESCRIPTIVE GEOMETRY	2	0.33	0	0.00	4	0.67	6
DRAFTING	7	0.14	13	0.25	31	0.61	51
DRAFTING TECHNOLOGY	0	0.00	1	0.11	8	0.89	9
ENGINEERING DRAWING	0	0.00	0	0.00	14	1.00	14
INDUSTRIAL DESIGN	0	0.00	0	0.00	1	1.00	1
MECHANICAL DRAWING	3	0.05	13	0.23	41	0.72	57
TECHNICAL ILLUSTRATION	0	0.00	0	0.00	4	1.00	4
OTHER DRAFTING	0	0.00	1	0.33	2	0.67	3
ELECTRICITY	7	0.25	3	0.11	18	0.64	28
ELECTRICITY-ELECTRONICS	2	0.05	4	0.10	34	0.85	40
ELECTRONICS	0	0.00	1	0.05	20	0.95	21
OTHER ELECTRICITY-ELECTRONICS	0	0.00	0	0.00	4	1.00	4
GENERAL INDUSTRIAL ARTS	8	0.16	33	0.67	8	0.16	49
GRAPHIC ARTS	4	0.08	8	0.17	36	0.75	48
PHOTOGRAPHY	0	0.00	2	0.10	19	0.90	21
PHOTOLITHOGRAPHY	0	0.00	0	0.00	2	1.00	2
PRINTING	0	0.00	1	0.20	4	0.80	5
COMMUNICATIONS TECHNOLOGY	2	0.12	7	0.41	8	0.47	17
OTHER GRAPHIC ARTS	1	0.33	0	0.00	2	0.67	3
GENERAL HOME MECHANICS	1	0.13	1	0.13	6	0.75	8
FLUID POWER	0	0.00	0	0.00	0	0.00	0
INDUSTRIAL MATERIALS	0	0.00	1	1.00	0	0.00	1
IND MATERIALS AND PROCESSES	0	0.00	2	0.20	8	0.80	10
INDUSTRIAL PROCESSES	0	0.00	0	0.00	1	1.00	1
INSTRUMENTATION	0	0.00	0	0.00	0	0.00	0
NUMERICAL CONTROL	0	0.00	0	0.00	0	0.00	0
OTHER IND MATERIALS AND PROC	0	0.00	0	0.00	2	1.00	2
MANUFACTURING	3	0.13	18	0.75	3	0.13	24
PRODUCTION TECHNOLOGY	1	0.50	1	0.50	0	0.00	2
GENERAL METALS	5	0.07	20	0.27	48	0.66	73
METAL MACHINING	0	0.00	1	0.08	11	0.92	12
METAL TECHNOLOGY	1	0.17	2	0.33	3	0.50	6
SHEET METAL	0	0.00	2	0.40	3	0.60	5
WELDING	2	0.11	0	0.00	16	0.89	18
FOUNDRY	0	0.00	0	0.00	1	1.00	1
OTHER METALS	0	0.00	0	0.00	2	1.00	2
PLASTICS	2	0.25	1	0.13	5	0.63	8
PLASTICS TECHNOLOGY	1	0.33	0	0.00	2	0.67	3
OTHER PLASTICS	0	0.00	0	0.00	0	0.00	0
AUTOMOTIVE MECHANICS	0	0.00	0	0.00	19	1.00	19
POWER-AUTOMOTIVE MECHANICS	0	0.00	0	0.00	8	1.00	8
POWER MECHANICS	3	0.10	8	0.27	19	0.63	30
TRANSPORTATION	1	0.33	0	0.00	2	0.67	3
POWER-TRANSPORTATION	1	0.07	8	0.53	6	0.40	15
OTHER POWER-AUTOMOTIVE	1	0.09	2	0.18	8	0.73	11
RESEARCH AND DEVELOPMENT	1	0.17	2	0.33	3	0.50	6
SERVICE INDUSTRIES	0	0.00	0	0.00	0	0.00	0
GENERAL WOODS	9	0.10	24	0.27	57	0.63	90
WOODS TECHNOLOGY	4	0.15	6	0.22	17	0.63	27
OTHER WOODS	2	0.17	1	0.08	9	0.75	12
AMERICAN INDUSTRY	5	0.45	4	0.36	2	0.18	11
EXPLORING TECHNOLOGY	1	0.17	4	0.67	1	0.17	6
FINISHING MATERIALS AND METHDS	0	0.00	1	1.00	0	0.00	1
OTHER INDUSTRIAL ARTS	8	0.44	6	0.33	4	0.22	18
TOTALS	101		227		613		941

TABLE 25

Frequency of Schools Requiring Students to Take IA Courses, Grade Levels at Which Required, Reported by Principals

Part 1: In your school are any industrial arts courses required?

RESPONSE	RANDOM			AIASA			EXEMPLARY		
	ABS FREQ	REL FREQ %	ADJ FREQ %	ABS FREQ	REL FREQ %	ADJ FREQ %	ABS FREQ	REL FREQ %	ADJ FREQ %
YES	228	31.7	33.3	48	13.6	14.2	47	24.6	25.8
NO	456	63.4	66.7	291	82.4	85.8	135	70.7	74.2
missing	35	4.9	-	14	4.0	-	9	4.7	-
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

Part 2: If yes, indicate grade level(s).

GRADE LEVELS AT WHICH REQUIRED	RANDOM SAMPLE SCHOOLS REQUIRING IA	AIASA SAMPLE SCHOOLS REQUIRING IA	EXEMPLARY SAMPLE SCHOOLS REQUIRING IA
6	24	7	3
7	144	21	28
8	149	34	35
9	38	9	9
10	16	2	5
11	11	1	3
12	9	1	3

When the responses were divided into the categories of junior high schools, senior high schools, and combination junior and senior high schools, a different perspective was gained. Over 90% of the high school principals in all three samples did not think industrial arts should be required for all students in their schools. As Table 27 illustrates, the junior high school principals were not as unified in their opinions. A majority (60.3%) of the junior high principals in

the random sample thought industrial arts should be required for all students, while slightly less than half (45.9%) of the exemplary and slightly over one-fourth (26.5%) of the AIASA sample principals held this view. Over three-fourths (78.6%) of the AIASA sample principals of combination junior and senior high schools felt industrial arts should not be required. Combination junior and senior high school principals in the random and exemplary samples were nearly evenly divided on this question, with just over 53% of the principals in both samples saying industrial arts should not be required.

TABLE 26

Views of Principals on Industrial Arts Being Required for All Students

In your opinion, should industrial arts be required for all students?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMPLARY SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
Yes	217	30.2	31.9	72	20.4	21.3	50	26.2	27.5
No	464	64.5	68.1	266	75.4	78.7	132	69.1	72.5
missing	38	5.3	-	15	4.2	-	9	4.7	-
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

3.10 CAREER INFORMATION PROVIDED IN INDUSTRIAL ARTS

One of the goals of industrial arts education over the years has been to provide career education. Since 1976, one of the major purposes of the pre-vocational orientation and exploration programs in industrial arts has been to help individuals make informed and meaningful educational and occupational choices. The responses of school personnel that were reported in Chapter 2 indicate this should be one of the major purposes of industrial arts. The surveys provided some data

TABLE 27

Views of Junior and Senior High Principals on IA Being Required for All Students

TYPE OF SCHOOL*	RANDOM SAMPLE			AIASA SAMPLE			EXEMPLARY SAMPLE		
	YES n/%	NO n/%	ROW TOT n/%	YES n/%	NO n/%	ROW TOT n/%	YES n/%	NO n/%	ROW TOT n/%
HIGH SCHOOL	23 8.3	254 91.7	277 44.9	6 4.5	126 95.5	132 48.5	7 8.4	76 91.6	83 51.6
JUNIOR HIGH	111 60.3	73 39.7	184 29.8	26 26.5	72 73.5	98 36.0	17 45.9	20 54.1	37 23.0
BOTH JUNIOR & SENIOR	73 46.8	83 53.2	156 25.3	9 21.4	33 78.6	42 15.4	19 46.3	22 53.7	41 25.5
COLUMN TOTAL	207 33.5	410 66.5	617 100.0	41 15.1	231 84.9	272 100.0	43 26.7	118 73.3	161 100.0

*Schools with enrollments reported for grade 11 were considered to be high school; schools with enrollments reported for grade 7 were considered to be junior high school; schools with enrollments in both are labeled as such in the table.

related to the career education objectives of industrial arts programs. Table 28 contains the responses of guidance coordinators who were asked, "To what extent are industrial arts teachers providing career information in their classes?" Their responses, taken collectively, indicate that industrial arts programs in public schools include a "moderate amount" of career information. Guidance coordinators in almost all schools in the three samples indicated that industrial arts teachers provided some career information. A somewhat larger percentage of coordinators in the exemplary sample than in the random sample indicated teachers provided "very much" career information.

In response to a related question, about one half of the industrial arts chairpersons in all three samples (see Table &tab384.) said they

believed industrial arts had a "moderate" influence on students in helping them make informed and meaningful educational and occupational choices. Most of the remaining chairpersons thought industrial arts had "great" influence in this area, with fewer than 7% in all three samples indicating they thought industrial arts had "limited" influence in helping students make choices. A larger percentage of the AIASA sample chairpersons than the exemplary or random sample chairpersons felt the influence of industrial arts was "great."

TABLE 28

Opinions of Guidance Coordinators on Industrial Arts Teachers Providing Career Information

To what extent are industrial arts teachers providing career information in their classes?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMP SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
None	6	0.8	0.9	3	0.8	0.9	0	0.0	0.0
Little	172	23.9	25.9	59	16.7	18.3	33	17.3	19.1
Moderate amt	405	56.3	61.1	207	58.6	64.3	108	56.5	62.4
Very much	80	11.1	12.1	53	15.0	16.5	32	16.8	18.5
missing	56	7.8	-	31	8.8	-	18	9.4	-
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

Guidance coordinators were asked, "In your opinion, how much career education <u>should</u> industrial arts teachers provide in their classes?" In all three samples (see Table 30), more than one half of of the guidance coordinators indicated industrial arts should be providing "very much" career information as a part of the program.
On a related topic, guidance coordinators were asked whether they provided career information to students interested in teaching industrial arts. Over 91% of the coordinators (see Table 31) indicated that they

TABLE 29

Opinions of Chairpersons on IA Helping Students Make Informed Educational and Occupational Choices

To what extent do you believe industrial arts helps students make informed educational and occupational choices?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMP SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
Limited	43	6.0	6.6	17	4.8	5.2	3	1.6	1.8
Moderate	391	54.4	60.4	162	45.9	49.5	97	50.8	57.4
Great	213	29.6	32.9	148	41.9	45.3	69	36.1	40.8
missing	72	10.0	-	26	7.4	-	22	11.5	-
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

TABLE 30

Opinion of Guidance Coordinators on How Much Career Information Industrial Arts Teachers Should Provide

In your opinion, how much career information should industrial arts teachers provide in their classes?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMP SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
Little	7	1.0	1.0	1	0.3	0.3	0	0.0	0.0
Moderate amt	300	41.7	44.9	157	44.5	48.3	76	39.8	43.9
Very much	361	50.2	54.0	167	47.3	51.4	97	50.8	56.1
missing	51	7.1	-	28	7.9	-	18	9.4	-
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

did provide career information on teaching industrial arts to students who were interested.

TABLE 31

Guidance Providing Career Information on Teaching Industrial Arts

Do guidance counselors in your school provide career information for students interested in pursuing industrial arts teaching as a career?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMP SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
Yes	611	85.0	92.0	297	84.1	91.1	164	85.9	95.3
No	53	7.4	8.0	29	8.2	8.9	8	4.2	4.7
missing	55	7.6	-	27	7.6	-	19	9.9	-
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

3.11 SUGGESTIONS ABOUT WAYS TO IMPROVE INDUSTRIAL ARTS COURSES

Guidance coordinators were asked how industrial arts courses could be made more accessible and appealing to students. This input is important to the field of industrial arts, since the guidance coordinator provides advice and information to every student regarding courses.

3.11.1 Opinions on How Industrial Arts Can be Made More Accessible

Table 32 contains the responses of coordinators to the question, "How can the industrial arts courses in your school be made more accessible to more students?" Coordinators could select one or more approaches from a list of eight. Over one half of the coordinators in all three samples selected "relating industrial arts to other program areas in the school" as a means for making courses more accessible. Although all approaches were selected, the more frequently selected approaches, in descending order were (1) improve laboratory facilities, (2)

develop or improve courses that are meaningful to females, (3) improve course offerings, and (4) improve scheduling. There were similarities in the percentages of coordinators who selected these and the other approaches.

TABLE 32

Opinions of Guidance Coordinators on How Industrial Arts Courses Could be Made More Accessible to More Students

How can the industrial arts courses in your school be made more accessible to more students? (Mark as many as apply.)

CATEGORIES	RANDOM SAMPLE N= 643		AIASA SAMPLE N= 314		EXEMP SAMPLE N= 167	
	COUNT	% CASES	COUNT	% CASES	COUNT	% CASES
Remove barriers to handicapped students	53	8.2	36	11.5	20	12.0
Make courses meaningful to females	300	46.7	145	46.2	76	45.5
Make courses meaningful to minorities	26	4.0	32	10.2	10	6.0
Relate IA to other programs	364	56.6	181	57.6	87	52.1
Improve scheduling	163	25.3	65	20.7	38	22.8
Improve facilities	333	51.8	139	44.3	75	44.9
Improve quality of teaching	86	13.4	34	10.8	20	12.0
Improve course offerings	297	46.2	125	39.8	61	36.5

3.11.2 Opinions on How Industrial Arts Can be Made More Appealing

When asked how industrial arts courses in their schools could be made more appealing to students, more of the guidance coordinators from the

Chapter 4
INDUSTRIAL ARTS STUDENTS

4.1 INTRODUCTION

Serving the needs of all students has long been an objective of the industrial arts profession. Recent federal legislation has mandated that all school subjects should accommodate students with special needs, females, and minorities. A large portion of the data collected during this study indicates that some efforts have been made to increase enrollments and to provide industrial arts services to these students.

Complete data on industrial arts enrollments were not obtained during this study because only a small number of state supervisors were able to provide data. Each state and territory was requested to report the numbers of male and female students who were enrolled in industrial arts courses by grade level for the period from 1975-76 through 1977-78. Because only a limited amount of data was reported those figures have not been discussed in this report, but are listed in Appendix D to serve as a reference for future studies which may attempt to collect similar information.

The data that are reported and discussed in this chapter include partial state enrollments of students in federally and non-federally funded industrial arts courses. Data obtained from the school surveys included (1) numbers of special-needs students enrolled in representative industrial arts courses, (2) the average number of students in certain racial and ethnic categories enrolled in industrial arts, (3) the percentage of the general student population who are enrolled in industrial arts courses, (4) percentages of females in representative industrial arts courses, (5) initiatives taken to recruit and enroll females, and (6) perceptions of the academic abilities of students taking industrial arts courses. The list of representative industrial arts courses referenced in this chapter and chapter 3 included all of the courses listed in Standard Terminology for Curriculum and Instruction in Local and State School Systems, Handbook VI.

4.2 ENROLLMENTS IN FEDERALLY FUNDED AND NON-FEDERALLY FUNDED INDUSTRIAL ARTS COURSES

State and territorial industrial arts supervisors were asked to report total student enrollments in federally funded (either partially or fully) and non-federally funded industrial arts courses, by grade level, for 1977-78. The incomplete data that were received, shown in Table 34, do not provide an accurate indication of how many industrial arts students were enrolled in that year. The fact that data could not be obtained may indicate that many of the existing instruments used for data collection have not made distinctions between federally and non-federally supported industrial arts programs.

TABLE 34

Partial 1977-78 Enrollments in Federally and Non-Federally Funded Industrial Arts Courses, Reported by Supervisors

GRADE	IND ARTS ENROLLMENTS FED FUNDS	STATES WITH ENRLMT	STATES W/OUT ENRLMT	IND ARTS ENROLLMENTS NO FED FUNDS	STATES WITH ENRLMT	STATES W/OUT ENRLMT
6	2,650	4	10	108,010	12	4
7	56,763	8	9	431,379	19	3
8	72,788	9	8	489,713	19	3
9	83,158	12	6	366,190	18	3
10	57,287	10	6	305,993	18	3
11	40,654	11	5	259,013	16	3
12	39,894	10	6	228,394	16	3
TOTAL	286,360	16	.	1,992,446	17	.

In those states that were able to provide data, there was a clear indication that only a small percentage of students were enrolled in programs that received federal monies. However, industrial arts has been eligible to receive federal vocational education monies for only a few years. The question of where federal funds are being used was only partially answered in this study. Part of the problem in collecting data may have been the way in which the survey questions were

phrased. Federal monies are disseminated in several different ways in states that received funds for industrial arts. Additional information is needed by the profession, and is required in federal reporting systems, but the present methods of data collection do not facilitate the retrieval of such information. For further information on finances in industrial arts, see Chapter 8.

4.3 PERCENTAGE OF STUDENT POPULATION ENROLLED IN IA COURSES IN THE SAMPLE SCHOOLS

Table 35 contains data on the percentages of the general student population who were enrolled in industrial arts in 1978-79 in the sample schools. In all three samples the highest percentages were found in the seventh and eighth grades. In the random sample schools that reported sufficient data to calculate percentages, almost one half of the students were enrolled in industrial arts in those grades. Slightly smaller percentages were noted for the exemplary sample schools, and noticeably smaller percentages were noted for the AIASA sample schools at the seventh and eighth grade levels. At all grade levels, the percentages of students enrolled in industrial arts was smaller in the AIASA sample schools than in the other sample schools. The random sample schools contained the largest percentages of students in grades six through nine. The exemplary sample schools contained the largest percentages in grades ten through twelve, where approximately one-third of the students were enrolled. In the three samples, the percentages tended to increase each year through junior high school and decrease each year through high school. Additional information may be found in Appendix F which contains data and a description of the percentages of enrollment broken down by grade level and by school size.

4.4 FEMALES IN INDUSTRIAL ARTS

The enrollment of females in industrial arts courses has traditionally been much lower than the enrollment of males. It has been found that many females are not aware of the course offerings in industrial arts and of the benefits these courses have to offer. Consequently, the recruitment of females has been a major concern in recent years. This section deals with questions asked regarding female enrollments and

TABLE 35

Percentage of General Student Population Enrolled in Industrial Arts by Grade Level

GRADE AND SAMPLES	ENROLLMENTS		% OF TOTAL STUDENT POPULATION ENROLLED	N OF SCHOOLS
	TOTAL	IND ARTS		
GRADE 6				
Random	12,128	3,962	32.7	127
AIASA	7,537	1,412	18.7	53
Exemp	2,527	522	20.7	27
GRADE 7				
Random	46,890	22,807	48.6	261
AIASA	23,467	6,591	28.1	100
Exemp	12,910	5,561	43.1	61
GRADE 8				
Random	60,499	28,232	46.7	313
AIASA	40,664	12,797	31.4	144
Exemp	17,590	8,105	46.1	76
GRADE 9				
Random	88,094	29,094	33.0	408
AIASA	49,669	13,199	26.6	165
Exemp	32,665	10,471	32.1	110
GRADE 10				
Random	87,733	25,498	29.1	365
AIASA	51,873	13,145	25.3	154
Exemp	35,470	12,728	35.9	104
GRADE 11				
Random	83,981	22,983	27.4	371
AIASA	45,585	9,342	20.4	150
Exemp	34,121	11,659	34.2	108
GRADE 12				
Random	78,165	18,866	24.1	369
AIASA	40,490	7,068	17.4	148
Exemp	33,238	10,350	31.1	109

recruitment activities undertaken to encourage females to enroll in industrial arts courses.

4.4.1 Percentage of Females Enrolled in Representative Industrial Arts Courses

The data in Tables 36, 37, and 38 present the responses of the random, AIASA, and exemplary sample industrial arts chairpersons regarding the enrollment of females in representative industrial arts courses in grades 6 through 12. These three tables contain the percentage of females in the ten most frequently cited courses and the representative courses that showed the highest percentages of female enrollment. A complete breakdown of the data reported for each of the courses cited can be found in Appendix E.

TABLE 36

Percentages of Females in Representative Courses, Reported by Random Sample Chairpersons

PART A: PERCENTAGE OF FEMALES IN 10 MOST FREQUENTLY CITED REPRESENTATIVE COURSES			PART B: REPRESENTATIVE COURSES WITH THE HIGHEST PERCENTAGE OF FEMALES		
COURSE TITLES	% FEM	N OF CASES	COURSE TITLES	% FEM	N OF CASES
General woods	17.5	409	Plastics technology	40.1	6
General metals	18.8	276	Industrial materials	39.5	3
Mechanical drawing	16.9	253	Fluid power	34.6	4
Drafting	15.6	194	Transportation	31.4	2
General ind. arts	20.5	182	Jewelry and lapidary	29.3	13
Arch. drafting	11.6	178	Ceramics	28.9	30
Graphic arts	20.2	120	Other plastics	25.5	2
Auto-mechanics	14.2	120	Other ind. crafts	24.0	11
Electricity	16.7	113	Manufacturing	23.9	47
Woods technology	12.5	96	Leather	23.4	54

The data indicate the percentages of females enrolled in industrial arts courses have increased in many of the courses reported in the Schmitt and Pelley study which was conducted in 1962-63. Also, females are enrolling in a greater variety of courses. In some of the courses that the Schmitt and Pelley study cited as having female enrollment, such as home mechanics and textiles, there was a considerable decrease in the percentage of females enrolled. In other courses, such as general woods, general industrial arts, and drafting, there was an increase in the percentage of females enrolled.

Five out of ten courses (general woods, general metals, mechanical drawing, drafing, and architectural drawing) most frequently cited as having females enrolled were the same in each of the three samples. These courses, listed in Part A of Tables 36, 37, and 38, were more traditional than the courses (listed in Part B) enrolling the greatest percentage of females. Construction courses were among the ten most frequently cited courses in the AIASA and exemplary sample schools. Manufacturing was found in the top ten most frequently cited courses in the AIASA sample. Although manufacturing was found in a smaller percentage of schools in the random sample than in the other two samples, a relatively high percentage of females were enrolled. As shown in Part B of the tables, four of the courses in the random (see Table 36) and AIASA (see Table 37) samples with the higher percentages of female enrollment were crafts courses. In the exemplary sample (see Table 38) two of the highest percentage courses were crafts courses. Schmitt and Pelley reported that crafts courses had the greatest (and almost the only detectable) percentages of females enrolled in industrial arts in 1962-63. Surprisingly, in the random and AIASA samples, fluid power ranked among the top ten or eleven in the highest percentage of females enrolled. Some type of industrial materials course ranked in the top ten courses in each of the three samples. A plastics course ranked high in female enrollment in the random and AIASA samples.

TABLE 37

Percentages of Females in Representative Courses, Reported by AIASA Sample Chairpersons

PART A: PERCENTAGE OF FEMALES IN 10 MOST FREQUENTLY CITED REPRESENTATIVE COURSES			PART B: REPRESENTATIVE COURSES WITH THE HIGHEST PERCENTAGE OF FEMALES		
COURSE TITLES	% FEM	N OF CASES	COURSE TITLES	% FEM	N OF CASES
General woods	20.5	167	Fluid power	44.8	3
Mechanical drawing	19.4	108	Descriptive geometry	41.9	1
General ind. arts	24.4	102	Other graphic arts	39.1	3
Drafting	18.0	100	Other ind. mat. proc.	37.4	1
General metals	18.2	98	Ceramics	33.7	12
Arch. drafting	17.3	84	Other ind. crafts	33.5	2
Construction	22.1	70	Leather	29.2	24
Manufacturing	23.4	63	Transportation	28.9	3
Woods technology	19.4	52	Plastics technology	27.8	6
Electricity	20.7	47	Crafts	26.4	17

TABLE 38

Percentages of Females in Representative Courses, Reported by Exemplary Sample Chairpersons

PART A: PERCENTAGE OF FEMALES IN 10 MOST FREQUENTLY CITED REPRESENTATIVE COURSES			PART B: REPRESENTATIVE COURSES WITH THE HIGHEST PERCENTAGE OF FEMALES		
COURSE TITLES	% FEM	N OF CASES	COURSE TITLES	% FEM	N OF CASES
General woods	16.6	89	Production technology	36.9	2
General metals	17.3	79	Textiles	36.8	1
Mechanical drawing	19.7	60	General home mechanics	29.1	8
Arch. drafting	15.4	55	Ind. mat. processes	26.5	1
Graphic arts	17.2	55	Ceramics	25.8	7
Drafting	18.3	52	Industrial crafts	25.6	8
Electri/electron	13.4	47	Research and dev.	23.9	7
Construction	17.8	40	Photography	23.4	23
Power mechanics	19.7	31	Printing	21.2	6
Auto-mechanics	10.9	30	Electronics	21.0	21

Overall, it appears that the exemplary sample schools were more diversified than the random and AIASA samples in the kinds of course offerings that were attracting females, but the courses that were cited most often in the random and exemplary sample schools tended to attract larger percentages of females. In all three samples, the ten courses most frequently cited as representative courses were not the courses for which the higher precentages of female enrollments were reported. In looking at total numbers of females who could be served in industrial arts, the best plan of action appears tc be a compromise of (1) offering a greater variety of courses that attract females and (2) making greater efforts to attract females into the current course offerings.

4.4.2 Potential of Industrial Arts for Breaking Down Stereotyped Roles for Females

Guidance coordinators were asked to indicate how great a potential they believed industrial arts has for breaking down stereotyped roles for females. In all three samples, less than 10% of the coordinators felt industrial arts had little or no potential for breaking down stereotyping roles for females. Over 40% of the responses in all three samples fell into the "moderate" category. Another 40% fell into the "very much" category. There were no marked differences in the

percentages of responses among the three samples, with only a slightly higher percentage of coordinators in the random than AIASA or exemplary sample marking the "moderate" category, and a slightly greater percentage of exemplary than AIASA or random sample coordinators marking the "very much" category.

TABLE 39

Opinion of Guidance Coordinators on the Potential of IA for Breaking Down Stereotyping Roles for Females

How great a potential do you believe industrial arts has for breaking down stereotyping roles for females?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMPLARY SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
NONE	2	0.3	0.3	2	0.6	0.6	1	0.5	0.6
LITTLE	57	7.9	8.5	30	8.5	9.2	14	7.3	8.1
MODERATE	321	44.6	47.9	149	42.2	45.7	72	37.7	41.9
VERY MUCH	290	40.3	43.3	145	41.1	44.5	85	44.5	49.4
Missing	49	6.8	-	27	7.6	-	19	9.9	-
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

4.4.3 Extent to Which Females Are Actively Encouraged to Enroll in Industrial Arts Courses

In each of the three samples, the majority of the principals who responded to the question concerning the encouragement of females to enroll in industrial arts courses indicated that females were "moderately encouraged." As indicated in Table 40, the answer, "moderately encouraged," was given by a slightly higher majority of principals in the exemplary sample (56.6%), than in the random (51.5%) and AIASA (52.1%) samples. The next highest percentage of answers fell in the "highly encouraged" category, with the random (33.6%) and AIASA

(32.0%) sample principals choosing this category slightly more often than the exemplary sample principals (28.0%). The following section describes some of the initiatives that have been taken to encourage females to enroll in industrial arts courses.

TABLE 40

Opinion of Principals on the Extent to Which Females are Encouraged to Enroll in IA Courses

In your school to what extent are females actively encouraged to enroll in industrial arts courses?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMPLARY SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
NOT AT ALL	9	1.3	1.3	4	1.1	1.2	3	1.6	1.6
LITTLE	92	12.8	13.5	49	13.9	14.7	25	13.1	13.7
MODER-ATELY	351	48.8	51.5	174	49.3	52.1	103	53.9	56.6
HIGHLY	229	31.8	33.6	107	30.3	32.0	51	26.7	28.0
missing	38	5.3	-	19	5.4	-	9	4.7	-
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

4.4.4 Initiatives to Encourage Females to Enroll in Industrial Arts Courses

When principals were asked how many of the seven initiatives listed (see Table 41) had been taken in their schools to encourage females to enroll in industrial arts courses, the initiative most frequently cited in all three samples was providing open enrollment (no teacher screening). Administrative encouragement of counselors to advise females to take industrial arts was found to be the next most frequently taken initiative in all three samples. Over one-half of the principals in all three samples also indicated they informed females

of the value of industrial arts training for them in their future schooling and work. There were only small differences between the samples in the percentage of schools that used these three techniques. The fourth most popular technique, again in all three samples, was informing parents of the value of industrial arts. Less than 2% of any of the principals said they used none of the techniques listed. The only difference found among the samples was that more random (17.1%) than AIASA (6.8%) and exemplary (11.5%) sample schools made industrial arts required for females.

In a different kind of question, the industrial arts chairpersons were asked to indicate if recruitment activities to enroll females in courses had been undertaken by the industrial arts faculty during the past five years. Approximately 65% of the respondents in each sample indicated that they had. This activity was the most frequently cited faculty activity in all three samples. (Refer to Chapter 6, Section 6.11, for more detail.)

4.5 STUDENTS WITH SPECIAL NEEDS

Since the passing of P.L. 94-142, The Education for all Handicapped Children Act, there has been national interest in providing programs to meet the educational needs of handicapped children in public school systems. Also, the Vocational Education Act of 1963, and the 1976 amendments to the act which speak specifically to serving the needs of all disadvantaged and handicapped students, have focused the attention of educators on meeting the needs of all students. The information in the following sub-sections provide data for determining the status of industrial arts in relation to serving students with special needs. Specifically, this section is concerned with (1) preparation of IEP's, (2) students with special needs who are enrolled in industrial arts, (3) the enrollment of handicapped students in representative industrial arts courses, and (4) state-level data on handicapped students enrolled in industrial arts courses that are approved for federal funds.

TABLE 41

Initiatives Taken to Encourage Females to Enroll in IA Courses, Reported by Principals

Which of the following initiatives have been taken in your school to encourage females to enroll in industrial arts courses? (Mark as many as apply.)

INITIATIVES TAKEN BY FACULTY	RANDOM SAMPLE N= 693		AIASA SAMPLE N= 338		EXEMP SAMPLE N= 182	
	COUNT	% CASES	COUNT	% CASES	COUNT	% CASES
Made IA courses required for females	117	17.1	23	6.8	21	11.5
Included restroom for females in IA laboratories	66	9.7	44	13.0	27	14.8
Encourage counslr to advise females to take IA course	469	68.7	215	63.6	125	68.7
Open enrollment (no teacher screening)	596	87.3	278	84.9	157	86.3
Testing for aptitude in IA	34	5.0	22	6.5	15	8.2
Inform parents of value of IA	218	31.9	99	29.3	69	37.9
Inform females of value of IA training for them	353	51.7	175	51.8	97	53.3
None of the above	11	1.6	6	1.8	2	1.1

4.5.1 Preparation of IEP for Handicapped Students

Industrial arts chairpersons were asked the question, "Do industrial arts teachers participate in the preparation of the individualized educational program (IEP) for handicapped students?" In the random sample, 27.4% of the chairpersons reported that teachers participated in the IEP preparation. In the AIASA schools, 23.9% of the chairpersons (see Table 43) reported teacher participation, and 29.5% of the chairpersons in the exemplary schools reported such participation.

TABLE 43

Teacher Participation in Preparation of IEP, Reported By Chairpersons

Do industrial arts teachers participate in preparation of the Individualized Educational Program (IEP) for handicapped students?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMP SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
YES	173	24.1	27.4	77	21.8	23.9	49	25.7	29.5
NO	459	63.8	72.6	245	69.4	76.1	117	61.3	70.5
missing	87	12.1	-	31	8.8	-	25	13.1	-
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

4.5.2 Number of Students with Special Needs Enrolled in Industrial Arts Courses

Table 42 shows, for each of the three samples, the average industrial arts enrollment for twelve categories of students with special needs. The number of cases for each sample included only those schools in which the industrial arts chairpersons reported enrollment figures (including 0 enrollment) for any of the twelve categories. The average number of special-needs students enrolled in industrial arts was calculated from those schools that had one or more students. Comparisons of mean enrollments can be made, within a given sample, among categories of special-needs students. Comparisons can also be made across the three samples on the means and percentages of schools that enrolled students with special needs in each category, but differences between the random and exemplary sample schools could have been because of differences in school sizes (see Section 1.10).

In all three samples, the three special needs categories with the greatest average number of special-needs students enrolled were, in descending order (1) disadvantaged, (2) specific learning disability, and (3) mentally gifted and talented. The fourth highest mean number of special-needs students reported in random and exemplary sample

schools was the category of mentally retarded. For the AIASA sample schools, the fourth highest number of special-needs students was in the category of other health impairments. All three samples indicated the lowest average enrollment was for students who were both deaf and blind. Four percent or less of the schools reported enrollments of deaf students. The average number of students enrolled was higher in the exemplary sample schools in every category of special needs except handicapped. The means in the random sample schools were second to the exemplary sample schools in eight out of twelve categories.

The enrollment of special needs-students can also be viewed from the perspective of the percentage of schools in a sample that had students enrolled in a given category. Approximately two-thirds of the schools in each of the three samples reported having students with specific learning disabilities enrolled in industrial arts. Approximately one-half of the schools had disadvantaged students enrolled. The other categories of special-needs students which had the higher percentages of schools reported enrollments were, in approximate descending order: (1) mentally gifted and talented, (2) speech impaired, (3) mentally retarded, and (4) hard of hearing. A greater percentage of schools in the exemplary sample had one or more students with special needs enrolled in nine of the twelve categories.

In summary, it is apparent that efforts have been made to accommodate students with special needs in industrial arts. A greater percentage of the exemplary sample schools accommodated a larger number of students per category than the other sample schools.

4.5.3 Enrollments of Handicapped Students in Representative Industrial Arts Courses

Part A of Tables 44, 45, and 46 show, for each of the three samples, the percentage of handicapped students enrolled in the ten courses most frequently cited as representative courses. Part B of the three tables lists ten or eleven courses in which the highest percentages of handicapped students were reported. The ten most often cited courses are the same as those listed in Section 4.4.1., but the courses with the higher percentages of handicapped students are different from those with the higher percentage of female students. A full descrip-

TABLE 42

Average Number of Students with Special Needs Enrolled in IA Courses, Reported by Chairpersons

SPECIAL NEEDS STUDENTS	RANDOM SAMPLE N=382*			AIASA SAMPLE N=219*			EXEMPLARY SAMPLE N=105*		
	MEAN	N OF SCH	% OF SCH	MEAN	N OF SCH	% OF SCH	MEAN	N OF SCH	% OF SCH
Hard of hearing	3.1	147	38	3.0	61	28	4.9	46	44
Deaf	2.5	11	3	2.1	8	4	5.3	4	4
Visually handicapped	3.2	94	25	5.9	47	21	8.4	32	30
Deaf-blind	1.0	1	-	0.0	0	0	2.0	1	1
Speech impaired	3.2	154	40	3.3	75	34	5.9	45	43
Orthopedically impaired	2.1	76	20	1.8	37	17	2.5	26	25
Specific learning disability	10.8	253	66	9.1	137	63	13.4	69	66
Other health impaired	4.3	81	21	6.8	35	16	7.4	29	28
Mentally gifted and talented	9.4	145	38	8.7	101	46	10.8	46	44
Mentally retarded	7.5	126	33	6.6	86	39	8.5	42	40
Seriously emotionally disturbed	4.5	93	24	3.9	50	23	5.9	33	31
Disadvantaged	21.0	187	49	21.3	117	53	20.4	58	55

*Number of schools with responses in all categories of special needs.

The "N of Schools" column is the number of schools that reported having one or more students within a given category of special need. The mean, therefore, reflects no zero enrollments but is the average for schools that reported having enrollments.

tion, for all three samples, of the percentages of handicapped students in the sixty-four courses listed is given in Appendix G.

For the majority of courses, fewer than 10% of the schools reported any enrollments of handicapped students. Neverthless, almost every course was cited in one or more of the samples as having some handicapped students enrolled. The courses that were cited most often (Part A) were not, with two exceptions, the courses that had the highest percentages (Part B) of handicapped students. The two exceptions were manufacturing courses in the AIASA sample, and mechanical drawing in the exemplary sample. The percentage of handicapped students who were enrolled in the ten courses that were most frequently taught ranged from 1.6% to 4.3% across the three samples. The percentages in the ten most frequently cited courses in the exemplary sample tended to be slightly lower than the other two samples. The AIASA sample schools tended to have the higher percentages of handicapped students enrolled. As shown in Part B of Table 45, the percentage ranged from 4.1% to 7.7%, but some of these percentages were based on a very small number of cases.

The kinds of courses that contained the higher percentages of handicapped students varied across the three samples, but some clustering of courses can be found. The random sample schools had higher percentages of students enrolled in three power courses; the exemplary sample schools had higher percentages of students enrolled in three craft courses; the AIASA sample had two crafts courses in the higher percentage category. Courses in the higher percentage category that were listed in two out of three samples were: printing, research and development, manufacturing, power-automotive mechanics, other power-automotive mechanics, and general home mechanics.

TABLE 44

Percentages of Handicapped in Representative Industrial Arts Courses, Reported by Chairpersons

Random Sample

PART A: PERCENTAGE HANDICAPPED IN MOST FREQUENTLY CITED REPRESENTATIVE COURSES			PART B: REPRESENTATIVE COURSES WITH THE HIGHEST PERCENTAGE HANDICAPPED		
COURSE TITLES	% HDCP	N OF CASES	COURSE TITLES	% HDCP	N OF CASES
General woods	2.6	409	Other ind. crafts	5.7	11
General metals	3.0	276	Manufacturing	4.7	47
Mechanical drawing	3.3	253	Industrial design	4.5	6
Drafting	2.6	194	Other graphic arts	4.0	11
General ind. arts	2.8	182	Power-auto. mechanics	3.8	39
Arch. drafting	2.7	178	Metal technology	3.8	23
Graphic arts	2.2	120	Research and dev.	3.7	2
Auto-mechanics	2.5	120	Power mechanics	3.7	92
Electricity	2.9	113	Welding	3.7	78
Woods technology	2.5	96	Other pwr.-auto.mech.	3.6	19

TABLE 45

Percentages of Handicapped in Representative Industrial Arts Courses, Reported by AIASA Sample Chairpersons

PART A: PERCENTAGE HANDICAPPED IN MOST FREQUENTLY CITED REPRESENTATIVE COURSES			PART B: REPRESENTATIVE COURSES WITH THE HIGHEST PERCENTAGE HANDICAPPED		
COURSE TITLES	% HDCP	N OF CASES	COURSE TITLES	% HDCP	N OF CASES
General woods	2.5	167	Other metals	7.7	2
Mechanical drawing	3.0	108	Other industrial crafts	7.3	2
General ind arts	2.6	102	Power-auto. mechanics	6.9	8
Drafting	2.5	100	General home mechanics	5.8	31
General metals	2.4	98	Other ind. mat. proc.	5.5	1
Arch. drafting	2.8	84	Art metal	5.3	5
Construction	3.0	70	Other industrial arts	4.9	28
Manufacturing	4.3	63	Finishing mat. meth.	4.8	2
Woods technology	2.8	52	Manufacturing	4.3	63
Electricity	2.6	47	Engineering drawing	4.1	20
			Printing	4.1	9

TABLE 46

Percentages of Handicapped in Representative Courses, Reported by Exemplary Sample Chairpersons

PART A: PERCENTAGE HANDICAPPED IN MOST FREQUENTLY CITED REPRESENTATIVE COURSES			PART B: REPRESENTATIVE COURSES WITH THE HIGHEST PERCENTAGE HANDICAPPED		
COURSE TITLES	% HDCP	N OF CASES	COURSE TITLES	% HDCP	N OF CASES
General woods	2.5	89	Industrial mat. proc.	6.5	1
General metals	2.4	79	Industrial crafts	5.6	6
Mechanical drawing	3.1	60	Technical illustration	5.3	5
Arch. drafting	3.0	55	Other ind. crafts	4.4	4
Graphic arts	2.6	55	Printing	4.3	6
Drafting	1.9	52	General home mechanics	3.6	8
Electri/electronics	2.8	47	Power-transportation	3.4	13
General ind. arts	1.6	41	Research and dev.	3.3	7
Construction	2.1	40	Jewelry and lapidary	3.2	3
Power mechanics	1.8	31	Mechanical drawing	3.1	60
Electricity	2.4	31	Other pwr.-auto. mech.	3.1	9

4.5.4 State-level Data on Handicapped Students in IA Courses Approved for Federal Funds

State and territorial supervisors were asked to report the number of students listed as having handicapping conditions who were enrolled in industrial arts courses approved for federal funding. The data indicated that more students who were classified as disadvantaged were enrolled; however, only five states reported this information. Responses in all categories were low, and thirty-five supervisors reported that information on enrollments of handicapped students was not available to them.

4.6 RACIAL AND ETHNIC COMPOSITION OF INDUSTRIAL ARTS STUDENT POPULATION

As would be expected, more white students were enrolled in industrial arts than any other racial or ethnic group in all three types of sample schools. Table 47 shows that a larger percentage of white students were enrolled in the random (82%) and exemplary (81%) sample schools than in the AIASA sample schools (74%). The AIASA sample schools contained the largest percentage of black students (19% compared to 10% in the random and 13% in the exemplary sample schools). The exemplary sample schools had a smaller percentage of Hispanic stu-

dents. The percentages of American Indians (or Alaskan Natives) and Asians (or Pacific Islanders) were similar in all three samples. However, a larger percentages of the exemplary sample schools had students in these two ethnic/racial categories enrolled in industrial arts than in the other two samples. In the random sample, only 59% of the schools responding indicated that black students were enrolled, compared to 86% in the AIASA and 76% in the exemplary sample schools.

4.7 ACADEMIC ABILITIES OF STUDENTS TAKING INDUSTRIAL ARTS COURSES

In the past, the academic abilities of students enrolled in industrial arts courses were typically stereotyped as being low in comparison to those of the general student population. The guidance coordinators' responses (see Table 48) and industrial arts chairpersons' responses (see Table 49) provide data on this subject.

TABLE 47

Percentage of Students in Industrial Arts By Racial and Ethnic Groups, Reported by Chairpersons

Indicate the number of students who take industrial arts courses according to each of the following racial or ethnic categories. All students must be accounted for.

RACIAL OR ETHNIC CATEGORIES	RANDOM SAMPLE N=393*				AIASA SAMPLE N=219*				EXEMPLARY SAMPLE N=110*			
	SCHOOL		STUDENTS ENROLLED IN IA		SCHOOL		STUDENTS ENROLLED IN IA		SCHOOL		STUDENTS ENROLLED IN IA	
	N	%	N	%	N	%	N	%	N	%	N	%
American Indian or Alaskan Native	102	26	812	1	47	21	318	1	40	36	292	1
Asian or Pacific Islander	138	35	1777	2	75	34	563	1	53	48	968	2
Hispanic	178	45	6949	6	114	52	3628	6	57	52	1291	3
White (not Hispanic)	377	96	96100	82	214	98	43707	74	108	98	37048	81
Black (not Hispanic)	231	59	11425	10	188	86	11039	19	82	76	6033	13
TOTAL N	393		117063		219		59255		110		45632	

*Number of schools with responses in all racial/ethnic categories.

The majority of guidance coordinators in all three samples who responded to this question (see Table 48) rated the academic abilities of students taking industrial arts courses as being the same as those of the general school population. A slightly larger percentage of guidance coordinators in the AIASA schools than in the random and exemplary sample schools rated the abilities of students taking industrial arts courses as being above those of the general school population.

TABLE 48

Ratings by Guidance Coordinators of Academic Abilities of Students Enrolled in IA Courses

How would you rate the academic abilities of those students in your school who take industrial arts courses in comparison to the general school population?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMPLARY SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
Well below	1	0.1	0.2	1	0.3	0.3	1	0.5	0.6
Tends to be below	256	35.6	38.4	80	22.7	24.6	63	33.0	36.8
Same	385	53.5	57.8	221	62.6	68.0	99	51.8	57.9
Tends to be above	21	2.9	3.2	21	5.9	6.5	6	3.1	3.5
Well above	3	0.4	0.5	2	0.6	0.6	2	1.0	1.2
Missing	53	7.4	-	28	7.9	-	20	10.5	-
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

A majority of the industrial arts chairpersons in all three samples (AIASA, 66.3%; random, 54.0%; exemplary, 59.4%) also indicated that the academic abilities of students taking industrial arts courses were the same as those of the general school population. Sizable percentages of chairpersons and guidance coordinators, particularly in the random and exemplary samples, rated industrial arts students as tend-

ing to be below average. Over one-third of the individuals in both these samples perceived industrial arts students as being less capable academically than the general student population. A larger percentage of chairpersons and coordinators in the AIASA sample than in the random or exemplary samples saw industrial arts students as above average, but the individuals reporting this perception made up less than 9% of the AIASA sample.

TABLE 49

Ratings by IA Chairpersons of Academic Abilities of Students Enrolled in IA Courses

How would you rate the academic abilities of those students in your school who take industrial arts courses in comparison to the general school population?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMPLARY SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
Well below	17	2.4	2.7	4	1.1	1.2	1	0.5	0.6
Tends to below	252	35.0	39.3	77	21.8	23.6	64	33.5	37.6
Same	346	48.1	54.0	216	61.2	66.3	101	52.9	59.4
Tends to be above	26	3.6	4.1	28	7.9	8.6	4	2.1	2.4
Well above	0	0.0	0.0	1	0.3	0.3	0	0.0	0.0
Missing	78	10.8	-	27	7.6	-	21	11.0	-
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

Chapter 5
INDUSTRIAL ARTS STUDENT ORGANIZATIONS

5.1 INTRODUCTION

Industrial arts student organizations have been an active part of the industrial arts program in many states since the early 1950's. At the 1965 national convention of the American Industrial Arts Association (AIAA), the executive board of the association approved the formation of the American Industrial Arts Student Association (AIASA) as a unit of AIAA. The 1976 Amendments to the Vocational Education Act of 1963 made specific references to the activities of vocational education student organizations and established the conditions whereby states could use federal funds to support student organizations. The rules and regulations for the 1976 amendments that appeared in the October 3, 1977 Federal Register contained a definition for industrial arts in the context of vocational education. (Industrial arts was the only area of vocational education to be defined.) On February 1, 1978, a policy statement was issued by USOE that listed AIASA as the officially recognized industrial arts youth organization. In this manner, AIASA became recognized by USOE as the only youth organization devoted exclusively to the needs of industrial arts students. In November 1978, AIASA formally became an independent organization with the formation of AIASA, Inc., which had its own charter, constitution, by-laws, and board of directors. Since that time, AIASA, Inc., rather than AIAA, has been the sponsoring agency for AIASA.

5.2 PRESENT STATUS OF AIASA

In attempting to document the present status of AIASA and its impact on industrial arts, questions were asked concerning the number and size of student organizations, the perceptions that principals and guidance personnel had of industrial arts student organizations and activities offered to student organization members. According to partial data obtained from state industrial arts supervisors, there were at least 937 industrial arts student organizations in forty-three states and territories in 1978-79; seven states did not report any

data. States reporting the greatest number of student organizations were: Texas with 176; Georgia, with 169; and Virginia, with seventy-one.

Part 1 of Table 50 shows that only 14.0% of the random sample chairpersons who responded to the question, "Do you have an industrial arts club in your school?" said "yes," while 33.1% of the exemplary sample chairpersons who responded indicated they had industrial arts student organizations in their schools. By comparison, 98.2% of the AIASA sample chairpersons who answered the question indicated their schools had student organizations. This figure is probably less than 100% because of minor changes or errors in the mailing list used as the source of AIASA-affiliated schools. Part 2 of Table 50 shows the percentage of schools that had industrial arts student organizations that were affiliated with AIASA. In the random sample, 32.9% of the student organizations were reported to be affiliated with AIASA while in the exemplary sample, 66.1% of the student organizations were reported to be AIASA affiliated. Once again, less than 100% of the AIASA sample schools reported their student organizations were affiliated with AIASA.

5.3 STUDENT ORGANIZATION LONGEVITY

A large percentage (89.8%) of the AIASA sample chairpersons and a small percentage (15.2%) of the random sample chairpersons reported on student organization longevity. On the average, industrial arts student organizations have been in existence in the random sample schools for 5.3 years (based on n=109), in the AIASA sample schools for 5.2 years (based on n=315), and in the exemplary sample schools for 6.3 years (based on n=57). (The maximum number of years that student organizations had been in existence were forty-one years, twenty-six years, and twenty-four years, respectively.) Although the average lengths of time the student organizations had been in existence were nearly identical for the AIASA and random sample schools, greater variation was observed in the random sample responses (random sample SD=6.6, AIASA sample SD=4.6). The exemplary sample responses closely resembled the random sample responses in the variations in the number of years their student organizations had been in existence (exemplary

TABLE 50

Schools Having Industrial Arts Student Organizations, Reported by Chairpersons

PART 1: Do you have an industrial arts student club in your school?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMP SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
Yes	91	12.7	14.0	322	91.2	98.2	57	29.8	33.1
No	558	77.6	86.0	6	1.7	1.8	115	60.2	66.9
missing	70	9.7	-	25	7.1	-	19	9.9	-
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

PART 2: If Yes, is it AIASA affiliated?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMP SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
Yes	26	28.5	32.9	304	94.4	98.1	37	64.9	66.1
No	53	58.2	67.1	6	1.8	1.9	19	33.3	33.9
missing	12	13.2	-	12	3.7	-	1	1.8	-
TOTALS	91	100.0	100.0	322	100.0	100.0	57	100.0	100.0

sample SD=6.4), but the exemplary sample student organizations had been in existence a full year longer, on the average, than the random and AIASA sample student organizations.

5.4 MEMBERSHIP IN INDUSTRIAL ARTS STUDENT ORGANIZATIONS

At the present time, AIASA does not have the degree of integration into industrial arts education that other vocational education student organizations have in their respective service areas. In 1978-79, AIASA student organizations were established in only about 2% of the secondary schools in the United States, whereas other vocational student organizations were established in a large majority of the schools that offered vocational programs. The following two subsections contain data on the membership in industrial arts student organizations and the percentage of industrial arts students who were members of industrial arts student organizations in 1978-79.

5.4.1 Membership in Industrial Arts Student Organizations from 1974-79

Overall, the average number of students participating in industrial arts student organizations (see Table 51) was relatively constant from 1974 to 1979, with means ranging from thirty-five to forty-one students per student organization across the three samples. The average per school membership in student organizations in the AIASA sample remained at about thirty-six students for four out of the five years, but the number of schools reporting data on student organization membership more than doubled over the five-year period. The means for the random sample student organizations fluctuated between thirty-four and forty members. The means for the exemplary sample student organizations peaked in 1976-77, but declined over the last two years.

The means varied little between the three samples, but other differences are noteworthy. The number of schools reporting data on student organization membership for a given year increased dramatically over the five-year period. The number of schools in the exemplary and random samples reporting student organization membership doubled in the 1974 to 1979 period. However, the percentages of schools reporting membership were small in those samples when compared to the percentage of schools in the AIASA sample reporting memberships. For

example, in 1978-79 the seventy-three schools in the random sample reporting memberships represented about 10% of the total of 719 random sample schools. Table 50 showed that only 14% of the schools in the random sample had industrial arts student organizations in that year. In that same year, fifty-three (28.7%) of the 191 exemplary sample schools reported data on student organization memberships; in the AIASA sample, 313 (88%) of the 353 schools in the sample reported student organization enrollments. The data in Table 50 shows that 33.1% of the exemplary sample and 98.2% of the AIASA sample schools had student organizations in that year. One possible explanation for a smaller numbers of schools reporting memberships in student organizations in the earlier years could simply be an unwillingness or inability to supply the data, but a more probable explanation is that there were no student members during these years for which no data were reported. Judging from the interest which has been generated in industrial arts student organizations during the last decade, it would be reasonable to assume that most of the apparent increases in the numbers of schools that had student organizations were real and were not the result of record keeping deficiencies.

5.4.2 Percentage of Total IA Students Who Were Members of IA Student Organizations

Prior to this survey, there was no information about the percentage of industrial arts students who were members of industrial arts student organizations. Vocational student organizations such as the Future Farmers of America (FFA), Vocational Industrial Clubs of America (VICA), and Distributive Education Clubs of America (DECA) have had an important place in their respective education programs, as reflected by the percentage of students enrolled. Therefore, it was considered important in this study to investigate the percentage of industrial arts students enrolled in industrial arts student organizations.

The percentage of industrial arts students was determined from responses on the principal's and the industrial arts chairperson's surveys. The total industrial arts student population was calculated by adding the principal's enrollment figures for grades six through twelve for 1978-79. The enrollment for student organization membership was reported by the industrial arts chairperson. In the random

TABLE 51

Enrollments in Industrial Arts Student Organizations, Reported by Chairpersons

What have been the enrollments, as of Jan. 1, of each year, in your school's industrial arts club for the past five years?

STATISTICS	1974-75	1975-76	1976-77	1977-78	1978-79
			RANDOM SAMPLE		
MEAN	35.9	38.4	34.3	35.0	40.1
STANDARD DEVIATION	35.3	37.9	35.9	35.2	62.8
N OF CASES	38	45	52	62	73
MINIMUM	8	8	5	5	5
MAXIMUM	200	210	220	230	480
			AIASA SAMPLE		
MEAN	36.7	38.5	36.8	36.3	36.4
STANDARD DEVIATION	56.7	61.5	61.8	60.3	62.0
N OF CASES	127	153	197	237	313
MINIMUM	5	3	6	5	1
MAXIMUM	550	670	780	800	670
			EXEMPLARY SAMPLE		
MEAN	39.1	39.8	41.4	38.8	34.1
STANDARD DEVIATION	58.9	53.6	54.5	47.5	43.0
N OF CASES	26	29	31	40	53
MINIMUM	1	4	6	7	3
MAXIMUM	267	248	261	251	256

sample (which included responses from fifty-eight schools out of 719), 10.8% of industrial arts students were enrolled in student organizations. A majority of schools in the AIASA sample (273 out of 353) had sufficient data to make the calculations. Fifteen percent of the industrial arts students in the AIASA sample were enrolled in an industrial arts student organization. In the exemplary sample (with data from fifty schools out of 191), 13.9% of the industrial arts students were enrolled in an industrial arts student organization. Although there was only a five-percentage-point difference across the samples, it is important to note that schools with AIASA chapters did have a higher percentage enrollment of industrial arts students in student organizations than did schools in either the random or exemplary samples.

5.5 STATE-LEVEL SUPERVISION OF INDUSTRIAL ARTS STUDENTS ORGANIZATIONS

State and territorial supervision of industrial arts student organizations appears to be on the increase. Eighteen of the forty-seven supervisors responding reported having a staff member assigned to supervise industrial arts student organizations. Five others indicated that they planned to add such an assignment within the next two years. Responsibility for student organization supervision took, on the average, just over one-third of a staff member's time. Those states reporting state-level supervision of industrial arts student organizations also reported the largest student membership in those student organizations.

5.6 FUNDING FOR STUDENT ORGANIZATIONS

Some kind of financial support is generally required for any educational activity. As Table 52 illustrates, however, such support at the state level for industrial arts student organizations is limited and generally takes the form of payment of travel expenses. A majority of the states (28) reported that no funding was provided.

At the local level (see Table 53), funds for student organizations were raised primarily through membership dues and fund-raising activities, with vocational, local school, and community funds making minor contributions. There appeared to be few differences between the random, AIASA, and exemplary samples regarding local funding of student organizations, in terms of the rank order of the methods of receiving funding. However, there were differences in the percentages of schools that used the different methods of funding. Larger percentages of the random sample schools used vocational and local school funds than did schools in the other two samples. On the other hand, larger percentages of the AIASA and exemplary sample schools used membership dues and fund raising activities to generate funds, than did random sample schools.

5.7 TRAINING FOR INDUSTRIAL ARTS STUDENT ORGANIZATION LEADERSHIP

Leadership preparation may be at least as important as funding in developing quality educational programs. Table 54 summarizes the kinds of preparation that industrial arts chairpersons (in schools

TABLE 52

State Funding for Industrial Arts Student Organizations, Reported by State Supervisors

TYPES OF FUNDING	STATES (N=43)	% OF CASES
Supplement to Teachers' Salary	4	9.3%
Extended Employment for Teachers	4	9.3%
Travel Expenses	11	25.6%
Other Funding	8	18.6%
None Provided	28	65.1%

TABLE 53

Local Funding of Industrial Arts Student Organizations, Reported by Chairpersons

Indicate the ways in which the industrial arts club is funded at your school.

WAYS OF FUNDING	RANDOM SAMPLE N= 85		AIASA SAMPLE N= 323		EXEMP SAMPLE N= 56	
	COUNT	% CASES	COUNT	% CASES	COUNT	% CASES
Membership Dues	51	60.0	258	79.9	44	78.6
Fund Raising	60	70.6	261	80.8	45	80.4
Vocational Funds	6	7.1	4	1.2	3	5.4
Local School Fund	13	15.3	32	9.9	5	8.9
Community Funds	4	4.7	6	1.9	3	5.4
Other	8	9.4	13	4.0	5	8.9

with student organizations) said they had received to enable them to serve as student organization advisors. As expected, a larger percentage of the chairpersons in AIASA sample than in the other samples received training to deal with student organization responsibilities. Almost one-half of of the random sample (48.9%) and slightly fewer of the exemplary sample (43.9%) chairpersons received no training.

State-level in-service training and leadership conferences were the major sources of such training for one-fourth or more of the chairpersons in the AIASA and exemplary samples, but were less frequently cited by for those in the random group. Of the chairpersons in the random sample who received preparation, 25.6% received student organization advisor training in their undergraduate programs. Smaller percentages of AIASA (19.6%) and exemplary (12.3%) sample chairpersons received undergraduate training in the operation of youth organizations. The smallest percentages noted in all three samples were for college field service.

Nearly one-third of the state supervisors reported that AIASA in-service workshops had been conducted in their states or territories within the past three years. These workshops involved a total of 1,051 teachers. Nine supervisors who reported they had not conducted AIASA workshops indicated they planned to conduct such workshops within the next three years.

5.8 MAJOR INCENTIVES FOR AND CONSTRAINTS TO PROMOTION OF IA STUDENT ORGANIZATIONS

In an attempt to provide data for developing strategies for implementing AIASA programs, state and territorial supervisors were asked to identify "major incentives" for promoting industrial arts student organizations as well as "constraints or roadblocks" to their promotion. The incentives that were cited were (1) extended contracts for teachers, (2) pre-service and in-service workshops, (3) national recognition of students, and (4) local, state, and national competitions. The constraints that were cited were (1) amount of teacher's time required, (2) teacher apathy, (3) lack of information, (4) lack of state-level leadership, and (5) lack of needs assessment.

When asked about state advisory committees, thirteen of the state supervisors indicated they had a state-level advisory committee to assist in the promotion and establishment of industrial arts student organizations.

TABLE 54

Preparation of Teachers to Serve as Student Organization Advisors, Reported by Industrial Arts Chairpersons

Indicate the types of preparation you received to serve as a student club advisor.

TYPES OF PREPARATION	RANDOM SAMPLE N= 90		AIASA SAMPLE N= 321		EXEMP SAMPLE N= 57	
	COUNT	% CASES	COUNT	% CASES	COUNT	% CASES
None	44	48.9	115	35.8	25	43.9
Undergraduate program	23	25.6	63	19.6	7	12.3
Graduate courses	18	20.0	61	19.0	8	14.0
Local in-service	10	11.1	50	15.6	3	5.3
State-level in-service	16	17.8	130	40.5	18	31.6
College field service	4	4.4	25	7.8	3	5.3
Leadership conference	17	18.9	80	24.9	17	29.8
Other	4	4.4	15	4.7	4	7.0

5.9 THE WORTH OF AIASA AS PERCEIVED BY PRINCIPALS AND COORDINATORS

The views toward AIASA expressed by principals and guidance personnel confirmed at least one of the roadblocks ("lack of information") identified by the supervisors. As indicated in Table 55, 38.8% of the principals in the random sample and 24.2% of those in the exemplary sample had never heard of AIASA. Only 8.1% of the principals in the AIASA sample had never heard of AIASA. When asked about the "worth of the AIASA organization," 37.5% of the principals in the random sample, 21.1% of the principals in the AIASA sample, and 41.0% of the principals in the exemplary sample did not have an opinion of AIASA's worth. The principals in the AIASA sample, as would be expected, were more positive toward AIASA, with 31.0% indicating it was of some worth and 37.3% indicating it was of "much worth."

TABLE 55

Perception of Worth of AIASA by Principals

The American Industrial Arts Student Association (AIASA) is the recognized industrial arts student organization. How worthwhile do do you perceive the AIASA organization?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMP SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
Not worth while	8	1.1	1.2	8	2.3	2.4	4	2.1	2.2
Of some worth	101	14.0	15.1	103	29.2	31.0	28	14.7	15.7
Of much worth	50	7.0	7.5	124	35.1	37.3	30	15.7	16.9
No opinion	251	34.9	37.5	70	19.8	21.1	73	38.2	41.0
Never heard of it	260	36.2	38.8	27	7.6	8.1	43	22.5	24.2
missing	49	6.8	-	21	5.9	-	13	6.8	-
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

As indicated in Table 56, 48.6% of the guidance coordinators in the random sample, 18.8% of those in the AIASA sample, and 39.9% of those in the exemplary sample reported that they had never heard of AIASA. Approximately one-fourth of the guidance coordinators (27.1% in the random sample, 25% in the AIASA sample, and 27.7% in the exemplary sample) had no opinion of the worth of AIASA. In all, only one-fourth of the random sample, one-third of the exemplary sample, and one-half of the AIASA sample guidance coordinators had an opinion about the worth of AIASA. Of these, larger percentages of the AIASA and exemplary sample coordinators felt AIASA was of much worth than in the other two samples. Random sample coordinators tended to view AIASA as being of some worth.

TABLE 56

Perception of Worth of AIASA by Guidance Coordinators

The American Industrial Arts Student Association (AIASA) is the recognized industrial arts student organization. How worthwhile do do you perceive the AIASA organization?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMP SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
Not worth while	9	1.3	1.4	3	0.8	0.9	2	1.0	1.2
Of some worth	85	11.8	13.0	70	19.8	21.6	23	12.0	13.3
Of much worth	65	9.0	9.9	109	30.9	33.6	31	16.2	17.9
No opinion	178	24.8	27.1	81	22.9	25.0	48	25.1	27.7
Never heard of it	319	44.4	48.6	61	17.3	18.8	69	36.1	39.9
missing	63	8.8	-	29	8.2	-	18	9.4	-
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

5.10 ENCOURAGEMENT OF STUDENTS TO PARTICIPATE IN IA STUDENT ORGANIZATION ACTIVITIES

The support and encouragement, or lack thereof, by the school administration can often ensure the success or failure of any kind of school activity. Principals in the three samples gave somewhat different responses to the question, "Does the administration encourage student participation in industrial arts club activities?" In the AIASA sample, 95.0% of the principals (see Table 57) said they encouraged student participation in industrial arts student organization activities. In the exemplary sample, 77.5% of the principals gave that answer, while in the random sample, 58.6% said they encouraged student organization participation. From these data, it is overwhelmingly clear that principals in schools with AIASA-affiliated student organizations encourage participation in the industrial arts student organizations in their schools and that principals in the exemplary sample schools were more inclined to encourage participation than principals in the random sample.

TABLE 57

Encouragement of Student Participation in IA Student Organizations by the Administration

Does the administration encourage student participation in industrial arts club activities?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMP SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
Yes	382	53.1	58.6	322	91.2	95.0	134	70.2	77.5
No	270	37.6	41.4	17	4.8	5.0	39	20.4	22.5
missing	67	9.3	-	14	4.0	-	18	9.4	-
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

5.11 IA STUDENT ORGANIZATION ACTIVITIES AND THE RELATIONSHIP WITH IA PROGRAM

The concept of integrating industrial arts student organization activities into the industrial arts program is an important one from the perspective of AIASA. This concept is fundamental to the philosophy that the attitudes, values, and skills acquired through participation in student organizations are vital components of the course content. School principals and industrial arts chairpersons were asked a number of questions to help clarify how youth organizations relate to the industrial arts curriculum and what materials and activities are used to reach youth organization objectives.

5.11.1 Views of Chairpersons on Relationship of IA and Student Organization Activities

When asked to select only one of the three descriptions of the relationship between student organization activities and the industrial arts program, the chairpersons' responses in the AIASA sample schools were markedly different from those in the other samples. As shown in Table 58, the view that there was no relationship between student organization activities and the industrial arts program was expressed by a larger percentage of random sample chairpersons (28.3%) than AIASA (5.9%) or exemplary (16.3%) sample chairpersons. Large percen-

tages of the industrial arts chairpersons in all three samples indicated that student organization activities were coordinated with the industrial arts program, and that student organization activities provided experiences not otherwise available in the regular industrial arts programs.

Unlike the chairpersons in the AIASA and exemplary samples, chairpersons in the random sample were fairly evenly divided in their responses. Chairpersons in the AIASA sample were evenly divided in their opinions about whether student organizations were coordinated with existing programs (46.4%) or provided supplemental activities and exeperiences (47.7%). A slight majority (52.0%) of the exemplary sample chairpersons held the view that student organization activities provided experiences not otherwise available. The view that student organization activities were coordinated with the industrial arts program was held by a larger percentage (46.4%) of the AIASA than random or exemplary sample chairpersons.

TABLE 58

Views of Chairpersons on the Relationship Between IA Student Organizations and IA Programs

In your opinion, which of the following categories best describes the relationship between the industrial arts club activities and the industrial arts program? (mark only one)

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMP SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
No relationship between them	71	9.9	28.3	19	5.4	5.9	16	8.4	16.3
Co-ordinated with IA prog	87	12.1	34.7	150	42.5	46.4	31	16.2	31.6
Provide other experiences	93	12.9	37.1	154	43.6	47.7	51	26.7	52.0
missing	468	65.1	-	30	8.5	-	93	48.7	-
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

5.11.2 Views of Principals on the Operation of Industrial Arts Student Organizations

The data shown in Table 59 reveals that over three-fourths of the junior and senior high school principals in all three samples perceived industrial arts student organizations as not being required activities, but rather as being extra-curricular or activities conducted outside of course work. Across all types of secondary schools, between 75.9% and 83.0% of the principals held this view. A somewhat larger percentage of principals in the random than AIASA or exemplary sample schools had no opinion on the operation of industrial arts student organizations in their schools. The type of school (junior or senior high) apparently made little difference in the way principals perceived the operation of student organizations, but the small number of principals' responses in some of the cells could make detection of differences difficult.

5.12 STUDENT ORGANIZATION ACTIVITIES

Some additional insights into the relationship between student organization activities and the industrial arts program may be gained by examining chairpersons' responses to a question regarding several specific activities of student organization members. Table 60 shows that over two-thirds of the chairpersons in all three samples who responded indicated their student organizations were involved in school-service projects: one-half to three-fourths conducted fund-raising activities, over one-half engaged in social activities, and about one-half were involved in activities that were a part of the course objectives. Over one-half of the exemplary and AIASA sample chairpersons who responded also indicated their student organization members were involved with planned programs of work.

TABLE 59

Views of Junior and Senior High School Principals on the Operation of Industrial Arts Student Organizations

How does the administration perceive industrial arts clubs operating in your school?

TYPE* OF SCHOOL	RANDOM SAMPLE** N= 76			AIASA SAMPLE** N= 253			EXEMP SAMPLE** N= 47		
	CO-CURR	EXTRA CURR	NO OPN	CO-CURR	EXTRA CURR	NO OPN	CO-CURR	EXTRA CURR	NO OPN
High school	4 11.4	28 80.0	3 8.6	21 18.6	87 77.0	5 4.4	2 8.7	19 82.6	2 8.7
Junior high	3 15.8	14 73.7	2 10.5	20 24.7	57 70.4	4 4.9	1 10.1	9 90.0	0 0.0
Both junior and senior	3 13.6	17 77.3	2 9.1	10 16.9	48 81.4	1 1.7	3 21.4	11 78.6	0 0.0
COLUMN TOTAL	10 13.2	59 77.6	7 9.2	51 20.2	192 75.9	10 4.0	6 12.8	39 83.0	2 4.3

* Method of determining type: (1) if enrollments were reported for grade 11 the school was considered to be a senior high school; (2) if enrollments were reported for grade 7 the school was considered to be a junior high school; and (3) if enrollments were reported for grades 7 and 11 the school was considered to be a combination.

** Only principals in schools with student organizations included.

There were only two activities in which similar percentages of chairpersons in the three samples indicated their student organization members were involved. Those activities were: community/civic service projects and alumni participation. These items were also the two activities participated in by the smallest percentage of schools. Although chairpersons in all three samples reported their student organizations were engaged in a variety of activities, a greater percentage of the AIASA and exemplary than the random sample student organizations were engaged in these activities. The range of student activities, and the fact that many kinds of activities were used in any given student organization, suggests that student organizations both reinforce industrial arts program objectives and provide students with supplemental experiences.

TABLE 60

Industrial Arts Student Organization Activities Reported by Chairpersons

Indicate the club activities in which members are involved.

STUDENT CLUB ACTIVITIES	RANDOM SAMPLE N= 89		AIASA SAMPLE N= 319		EXEMP SAMPLE N= 55	
	COUNT	% CASES	COUNT	% CASES	COUNT	% CASES
Planned program of work	37	41.6	171	53.6	28	52.7
School service projects	60	67.4	238	74.6	46	83.6
Community-civic service project	33	37.1	133	41.7	21	38.2
Alumni participation	6	6.7	27	8.5	4	7.3
Leadership development training	29	32.6	146	45.8	23	41.8
Fund raising	45	50.6	249	78.1	43	78.2
Social activity	46	51.7	200	62.7	33	60.0
Activities in line with course objective	40	44.9	165	51.7	31	56.4
Other	8	9.0	26	8.2	6	10.9

5.13 DISSEMINATION OF IA STUDENT ORGANIZATION INFORMATION, REPORTED BY CHAIRPERSONS

A wide range of methods appears to be used in disseminating information about student organization activities (see Table 61) Comparison among the samples may be less instructive than noting the various methods employed. It should be noted, however, that smaller percentages of the random sample chairpersons indicated their student organizations used the five types of dissemination activities listed. Larger percentages of AIASA sample chairpersons indicated their student organizations were engaged in the five types of dissemination activities. The percentages of exemplary sample chairpersons indicating

TABLE 61

Dissemination Activities of Industrial Arts Student Organizations, Reported by Chairpersons

Indicate the types of dissemination activities that are used by your industrial arts club.

ACTIVITIES	RANDOM SAMPLE N= 68		AIASA SAMPLE N= 282		EXEMP SAMPLE N= 47	
	COUNT	% CASES	COUNT	% CASES	COUNT	% CASES
Chapter newsletter	7	10.3	65	23.0	4	8.5
Articles for state publications	11	16.2	101	35.8	15	31.9
Articles for national publications	4	5.9	46	16.3	7	14.9
Radio, newspaper and television releases	27	39.7	134	47.5	21	44.7
Visits to other IA clubs, other student groups	25	36.8	146	51.8	22	46.8
Other	33	48.5	87	30.9	18	38.3

their student organizations used these activities fell between the random and AIASA samples' percentages. The percentages of chairpersons who marked the category, "other," was sizable in all three samples and included such things as: articles in school paper, project fairs, competitive events, yearly mass production events, displays, school calendars, and social activities. These "other" activities were written on the opscan forms in spaces provided.

5.14 RESOURCES USED TO HELP MEET STUDENT ORGANIZATION OBJECTIVES, REPORTED BY CHAIRPERSONS

Table 62 summarizes the kinds of resources used to assist youth organizations in meeting their objectives. As one might expect, AIASA publications were used by a far greater number of student organizations in the AIASA sample than in the other two samples. Also of interest, student organizations from the random sample relied more

heavily on community resource people than did those in the AIASA and exemplary samples. A smaller percentage of the random (32.5%) than AIASA (67.5%) and exemplary (62.3%) sample student organizations of state industrial arts supervisors, but over one-half (51.8%, 55.5%, and 62.3%, respectively) of them made use of local industrial arts supervisors. Overall, local and state supervisors were cited most often as resources that assisted student organizations. Publications from AIASA, Inc., community resource people, and other school personnel follow in frequency. The most noteworthy point may be the broad repertoire of resources that the chairpersons reported using.

TABLE 62

Materials, Resources, and References to Assist IA Student Organizations, Reported by Chairpersons

Identify the types of materials, resources or references that assist your student organization in implementing club objectives.

MATERIALS, RESOURCES OR REFERENCES	RANDOM SAMPLE N= 83		AIASA SAMPLE N= 317		EXEMP SAMPLE N= 53	
	COUNT	% CASES	COUNT	% CASES	COUNT	% CASES
Publications from AIASA, Inc.	24	28.9	258	81.4	28	52.8
Publications from vocational student clubs	18	21.7	76	24.0	12	22.6
Publications from academic student clubs	3	3.6	30	9.5	7	13.2
Local industrial arts supervisor	43	51.8	176	55.5	33	62.3
State industrial arts supervisor	27	32.5	214	67.5	33	62.3
Local vocational supervisor	17	20.5	63	19.9	7	13.2
State vocational supervisor	10	12.0	29	9.1	4	7.5
Other school personnel	32	38.6	114	36.0	18	34.0
Community resource people	40	48.2	117	36.9	22	41.5
Other	14	16.9	20	6.3	2	3.8

Chapter 6
TEACHERS OF INDUSTRIAL ARTS

6.1 INTRODUCTION

This chapter presents data on industrial arts teachers employed during the 1975-76 and 1977-78 academic years. The major focus of data collection was placed on the numbers of teachers employed, types of certificates, number of vacancies, types of degrees earned, lengths of teaching service, and professional involvements. This type of information was needed in order to provide a comprehensive profile of industrial arts teachers in the public secondary schools.

6.2 INDUSTRIAL ARTS TEACHERS EMPLOYED FROM 1975-76 TO 1977-78

With forty-one states partially reporting data, as shown in Table 63, there were at least 49,294 industrial arts teachers employed in 1975-76; at least 47,467 employed in forty states in 1976-77; and at least 55,973 employed in forty-four states 1977-78. Of these, approximately 1% were female. The total number of teachers employed decreased in fifteen states and increased in twenty-five states from the 1975-76 academic year to the 1978-79 academic year. Data shown in Table 63 under the headings of temporary and non-certified teachers are missing for about one-fourth of the states that provided data on fully certified teachers. More details on the levels of certification of teachers are provided in the following four subsections.

6.2.1 Fully Certified Teachers, 1975-76 TO 1977-78

In 1975-76, there were at least 47,790 fully-certified male teachers of industrial arts employed in forty-one states. Table 64 lists the thirty states which employed the 341 fully-certified female teachers that year. In descending order, the states of California, Texas, Michigan, Pennsylvania, and Florida employed the greatest number of fully-certified female teachers. The states/territories with the highest percentages of female industrial arts teachers in descending order were the Virgin Islands (11.7%), Arkansas (4.2%), District of Columbia (2.7%), Florida (2.2%) North Carolina (2.0%), and Texas

TABLE 63

Industrial Arts Teachers Employed from 1975-76 to 1977-78 by Level of Certification in Industrial Arts by States

	1975-76 CERTIFICATION			1976-77 CERTIFICATION			1977-78 CERTIFICATION		
	FULL	TEMP	NON-	FULL	TEMP	NON-	FULL	TEMP	NON-
AL	122	0	18	144	0	23	191	0	23
AK	198	40	.	218	40	.	228	40	.
AZ	806	.	.	816	.	.	824	.	.
AR	90	0	0	100	0	0	100	0	0
CA	6835	.	.	7046	.	.	7282	.	.
CO	968	0	0	969	0	0	960	0	0
CT	.	.	.	.	.	.	1221	.	.
DE	187	0	0	190	0	0	190	0	0
DC	111	.	.	108	.	.	103	.	.
FL	1103	.	122	1192	.	70	1253	.	35
GA	621	5	0	590	6	0	591	7	0
HA	203	0	1	221	1	1	226	2	2
ID	247	.	.	260	.	.	249	.	.
IL	.	61	.	.	51	.	4624	63	.
IN	2152	0	0	2203	0	0	2240	0	0
IA	1052	10	.	1053	12	.	1056	15	.
KY	552	0	0	568	0	0	577	0	0
LA	.	.	.	.	.	.	540	11	20
MD	.	.	.	.	.	.	.	.	.
MA	1939	400	.	.	350	.	2015	0	.
MI	3491	.	.	3394	.	.	3308	.	.
MN	1563	0	0	1543	0	0	1511	0	0
MS	260	8	0	268	6	0	274	0	0
MO	1240	0	0	1283	0	0	1266	0	0
MT	223	0	0	225	0	0	229	0	0
NE	.	.	.	.	.	.	.	.	.
NV	15	0	0	18	0	0	20	0	0
NH	.	.	.	.	.	.	.	.	.
NJ	2660	68	0	2713	60	0	2815	40	0
NM	312	3	0	307	2	0	303	2	0
NY	4496	.	80	4384	.	66	4377	.	48
NC	598	10	10	598	6	9	598	10	10
ND	189	0	0	192	0	0	187	0	0
OH	2956	0	15	2933	12	14	2912	24	10
OK	504	.	.	459	.	.	466	.	.
OR	951	.	.	951	.	.	952	.	.
PA	3037	25	15	3047	20	10	3057	15	5
PR	542	15	1	587	34	42	567	34	42
SC	.	.	.	.	.	.	.	.	.
SD	.	.	.	.	.	.	.	.	.
TN	475	5	46	465	5	48	462	7	51
TX	2290	30	.	2273	15	.	2129	28	.
UT	473	6	6	459	6	6	437	5	5
VT	203	0	0	205	0	0	221	0	0
VA	974	79	79	979	66	66	1061	92	92
WA	1501	0	0	1502	0	0	1503	0	0
WV	.	.	0	.	.	0	.	.	0
WI	1750	0	0	1802	0	0	1842	0	0
WY	228	.	.	232	.	.	243	.	.
VI	19	0	0	23	0	0	25	0	0
TOTAL	48136	765	393	46420	692	355	55235	395	343
N	41	32	30	40	32	30	44	32	31
GRAND TOTALS	49294			47467			55973		

(2.0%). In 1976-77 there were at least 46,090 fully-certified male and 433 fully-certified female industrial arts teachers employed in forty and forty-one states, respectively. Seven states out of the forty-one actually employed no females. Eleven states had employed no female teachers the previous year. During the 1977-78 academic year, there were 54,709 fully-certified male industrial arts teachers and 526 fully-certified female industrial arts teachers employed in forty-four and forty-two states, respectively.

6.2.2 Emergency or Temporarily Certified Teachers, 1975-76 to 1977-78

State supervisors reported there were at least 765 industrial arts teachers with temporary certification employed in 1975-76. The total numbers of teachers who held emergency or temporary certification, shown in Table 65, exceeds the sum of the male and female teachers because of partial data reported from one state. Fourteen states employed the 696 male teachers. Seventeen states reported no emergency or temporarily certified male teachers were employed. Eight female emergency or temporarily certified teachers were employed in four states. Twenty-five states reported that no emergency or temporarily certified female teachers were employed. A close review of Table 65 shows that Massachusetts, Virginia, New Jersey, and Illinois had the highest numbers of emergency or temporarily certified industrial arts teachers. In 1976-77, there were 636 male and five female industrial arts teachers with emergency or temporary certificates employed in sixteen and two states, respectively. Sixteen and twenty-seven states, respectively, reported employing no emergency or temporarily certified male or female teachers. In total, at least 692 teachers with temporary or emergency certification were employed in 1976-77. In 1977-78, there were 323 male and nine female teachers with emergency or temporarily certification employed (a total of 395) in fifteen and four states, respectively. Overall, the data show a large reduction in the total number of temporarily certified teachers employed from 1975-76 to 1977-78. The total number of emergency or temporary certified teachers appears to have declined sharply from 1976-77 to 1977-78, but nine states reported increased numbers of such teachers and only four reported decreased numbers of such teachers.

TABLE 64

Number of Fully Certified Industrial Arts Teachers in 1975-78, by State, Reported by State Supervisors

	1975-76			1976-77			1977-78		
STATE	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
AL	120	2	122	140	4	144	185	6	191
AK	190	8	198	210	8	218	220	8	228
AZ	803	3	806	814	2	816	823	1	824
AR	90	0	90	100	0	100	100	0	100
CA	6780	55	6835	6945	101	7046	7146	136	7282
CO	960	8	968	960	9	969	950	10	960
CT	.	.	.	.	.	.	1215	6	1221
DE	187	0	187	190	0	190	190	0	190
DC	108	3	111	105	3	108	100	3	103
FL	1079	24	1103	1169	23	1192	1233	20	1253
GA	613	8	621	581	9	590	581	10	591
HA	203	0	203	220	1	221	225	1	226
ID	247	0	247	260	0	260	249	0	249
IL	.	.	.	.	.	.	4624	.	4624
IN	2150	2	2152	2200	3	2203	2240	.	2240
IA	1051	1	1052	1051	2	1053	1051	5	1056
KY	550	2	552	565	3	568	575	2	577
LA	.	.	.	.	.	.	530	10	540
MD	.	.	.	.	.	.	.	.	.
MA	1935	4	1939	.	3	.	2000	15	2015
MI	3463	28	3491	3365	29	3394	3284	24	3308
MN	1560	3	1563	1540	3	1543	1510	1	1511
MS	260	0	260	268	0	268	274	0	274
MO	1235	5	1240	1275	8	1283	1255	11	1266
MT	223	0	223	225	0	225	228	1	229
NE	.	.	.	.	.	.	.	.	.
NV	15	0	15	18	0	18	20	0	20
NH	.	.	.	.	.	.	.	.	.
NJ	2650	10	2660	2700	13	2713	2800	15	2815
NM	312	0	312	307	0	307	303	0	303
NY	4429	67	4496	4314	70	4384	4289	88	4377
NC	586	12	598	583	15	598	580	18	598
ND	189	0	189	191	1	192	186	1	187
OH	2950	6	2956	2925	8	2933	2900	12	2912
OK	500	4	504	455	4	459	461	5	466
OR	950	1	951	950	1	951	950	2	952
PA	3012	25	3037	3022	25	3047	3032	25	3057
PR	541	1	542	569	18	587	548	19	567
SC	.	.	.	.	.	.	.	.	.
SD	.	.	.	.	.	.	.	.	.
TN	471	4	475	460	5	465	456	6	462
TX	2244	46	2290	2229	44	2273	2087	42	2129
UT	473	0	473	458	1	459	436	1	437
VT	202	1	203	204	1	205	220	1	221
VA	966	8	974	971	8	979	1049	12	1061
WA	1500	1	1501	1500	2	1502	1500	3	1503
WV	.	.	.	.	.	.	.	.	.
WI	1750	0	1750	1800	2	1802	1840	2	1842
WY	226	2	228	230	2	232	241	2	243
VI	17	2	19	21	2	23	23	2	25
TOT.	47790	346	48136	46090	433	46420	54709	526	55235
N	41	41	41	40	41	40	44	42	44

Massachussetts, which reported over one-half of the emergency or temporary certified teachers in 1957-76 and 1976-77, did not report data for 1977-78, but indicated that many of the teachers had become fully certified to teach ind trial arts.

6.2.3 Non-Certified Teachers, 1975-76 to 1977-78

Table 66 shows that in 1975-76 there were 388 non-certified male and five non-certified female industrial arts teachers employed in eleven and three states, respectively. In 1976-77, there were 347 non-certified male and eight non-certified female industrial arts teachers employed in eleven and three states, respectively. In 1977-78, state supervisors reported 335 non-certified male teachers and eight non-certified female teachers were employed in twelve and three states, respectively. The total number of non-certified industrial arts teachers appears to have declined slightly each year from 1975-76 to 1977-78. The states and territories of Puerto Rico, Florida, New York, Tennessee, and Virginia reported the higher numbers of non-certified teachers employed over the three-year period.

6.2.4 Percent of Full, Temporary, and Non-Certified Teachers, Reported by Supervisors

Table 67, which contains data for twenty-seven states that reported complete data shows that in 1975-76, 98.3% of the industrial arts teachers held full certification, 0.92% held emergency or temporary certification, and 0.79% were teaching without certification. In 1967-77, 98.2% of the industrial arts teachers had full certification, 0.91% held emergency or temporary certification, and 0.89% were without certification. In 1977-78, 97.8% of the industrial arts teachers were fully certified, 1.1% had temporary or emergency certification, and 1.1% of the industrial arts teachers held no certification.

The supervisors' data given in Table 67 shows that the percentage of teachers in industrial arts who were fully certified decreased only slightly and the percentages of non-certified industrial arts teachers increased only slightly from 1975-76 to 1977-78. The percentage of industrial arts teachers with full certification determined from the supervisors' data was at least three percent higher than the 94.4% reported by the Schmitt and Pelley study for 1962-63. The percentages

TABLE 65

Emergency or Temporary Certified Industrial Arts Teachers in 1975-78 by State Supervisors

	1975-76			1976-77			1977-78		
STATE	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
AL	0	0	0	0	0	0	0	0	0
AK	40	.	40*	40	.	40*	40	.	40*
AZ	.	.	.	.	.	.	.	.	.
AR	0	0	0	0	0	0	0	0	0
CA	.	.	.	.	.	.	.	.	.
CO	0	0	0	0	0	0	0	0	0
CT	.	.	.	.	.	.	.	.	.
DE	0	0	0	0	0	0	0	0	0
DC	.	.	.	.	.	.	.	.	.
FL	.	.	.	.	.	.	.	.	.
GA	5	0	5	6	0	6	7	0	7
HA	0	0	0	1	0	1	2	0	2
ID	.	.	.	.	.	.	.	.	.
IL	.	.	61+	.	.	51+	.	.	63+
IN	0	0	0	0	0	0	0	0	0
IA	10	.	10*	12	.	12*	15	.	15*
KY	0	0	0	0	0	0	0	0	0
LA	.	.	.	.	.	.	10	1	11
MD	.	.	.	.	.	.	.	.	.
MA	400	0	400	350	0	350	.	0	.
MI	.	.	.	.	.	.	.	.	.
MN	0	0	0	0	0	0	0	0	0
MS	8	0	8	6	0	6	0	0	0
MO	0	0	0	0	0	0	0	0	0
MT	0	0	0	0	0	0	0	0	0
NE	.	.	.	.	.	.	.	.	.
NV	0	0	0	0	0	0	0	0	0
NH	.	.	.	.	.	.	.	.	.
NJ	67	1	68	60	0	60	40	0	40
NM	3	0	3	2	0	2	2	0	2
NY	.	.	.	.	.	.	.	.	.
NC	6	4	10	2	4	6	4	6	10
ND	0	0	0	0	0	0	0	0	0
OH	0	0	0	12	0	12	23	1	24
OK	.	.	.	.	.	.	.	.	.
OR	.	.	.	.	.	.	.	.	.
PA	25	0	25	20	0	20	15	0	15
PR	13	2	15	34	0	34	34	0	34
SC	.	.	.	.	.	.	.	.	.
SD	.	.	.	.	.	.	.	.	.
TN	5	0	5	5	0	5	7	0	7
TX	29	1	30	14	1	15	27	1	28
UT	6	0	6	6	0	6	5	0	5
VT	0	0	0	0	0	0	0	0	0
VA	79	0	79	66	0	66	92	0	92
WA	0	0	0	0	0	0	0	0	0
WV	.	.	.	.	.	.	.	.	.
WI	0	0	0	0	0	0	0	0	0
WY	.	.	.	.	.	.	.	.	.
VI	0	0	0	0	0	0	0	0	0
TOT.	696	8	765	636	5	692	323	9	395
N	31	29	32	31	29	32	31	30	32

*Totals include incomplete data for Alaska and Iowa.
+Only totals were available for Illinois.

TABLE 66

Non-Certified Industrial Arts Teachers in 1975-78 by State, Reported by State Supervisors

	1975-76			1976-77			1977-78		
STATE	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
AL	18	0	18	23	0	23	23	0	23
AK	.	.	.	.	.	.	.	.	.
AZ	0	0	0	0	0	0	0	0	0
AR	0	0	0	0	0	0	0	0	0
CA	0	0	0	0	0	0	0	0	0
CO	0	0	0	0	0	0	0	0	0
CT	0	0	0	0	0	0	0	0	0
DE	0	0	0	0	0	0	0	0	0
DC	122	0	122	70	0	70	35	0	35
FL	0	0	0	0	0	0	0	0	0
GA	1	0	1	1	0	1	2	0	2
HA	.	.	.	.	.	.	.	.	.
ID	0	0	0	0	0	0	0	0	0
IL	0	0	0	0	0	0	0	0	0
IN	0	0	0	0	0	0	0	0	0
IA	0	0	0	0	0	0	20	0	20
KY	.	.	.	.	.	.	.	.	.
LA	.	0	.	.	0	.	.	0	.
MD	.	.	.	.	.	.	.	.	.
MA	0	0	0	0	0	0	0	0	0
MI	0	0	0	0	0	0	0	0	0
MN	0	0	0	0	0	0	0	0	0
MS	0	0	0	0	0	0	0	0	0
MO	0	0	0	0	0	0	0	0	0
MT	.	.	.	.	.	.	.	.	.
NE	0	0	0	0	0	0	0	0	0
NV	.	.	.	.	.	.	.	.	.
NH	0	0	0	0	0	0	0	0	0
NJ	0	0	0	0	0	0	0	0	0
NM	79	1	80	65	1	66	47	1	48
NY	7	3	10	3	6	9	4	6	10
NC	0	0	0	0	0	0	0	0	0
ND	15	0	15	14	0	14	10	0	10
OH	.	.	.	.	.	.	.	.	.
OK	15	0	15	10	0	10	5	0	5
OR	1	0	1	42	0	42	42	0	42
PA	.	.	.	.	.	.	.	.	.
PR	45	1	46	47	1	48	50	1	51
SC	.	.	.	.	.	.	.	.	.
SD	6	0	6	6	0	6	5	0	5
TN	0	0	0	0	0	0	0	0	0
TX	79	0	79	66	0	66	92	0	92
UT	0	0	0	0	0	0	0	0	0
VT	0	0	0	0	0	0	0	0	0
VA	0	0	0	0	0	0	0	0	0
WA	0	0	0	0	0	0	0	0	0
WV	0	0	0	0	0	0	0	0	0
WI	.	.	.	.	.	.	.	.	.
WY	0	0	0	0	0	0	0	0	0
VI									
TOT.	388	5	393	347	8	355	335	8	343
N	30	31	30	30	31	30	31	32	31

determined from the school surveys, presented in the following section, differ from those of the supervisors by several percentage points.

TABLE 67

Percentage of Fully Certified, Emergency/Temporary Certified, and Non-Certified Teachers, 1975-78 by State

NUMBER OF TCHRS	TEACHER CERTIFICATION IN 1975-76 (n= 27)			TEACHER CERTIFICATION IN 1976-77 (n= 27)			TEACHER CERTIFICATION IN 1977-78 (n= 27)		
	FULL	TEMP	NON-	FULL	TEMP	NON-	FULL	TEMP	NON-
Mean	884.6	8.3	7.1	893.8	8.3	8.1	839.4	9.2	9.6
S.D.	917.8	19.7	17.5	923.4	17.5	17.1	894.5	19.7	21.0
Pct of Total	98.3	0.92	0.79	98.2	0.91	0.89	97.8	1.1	1.1

6.3 TEACHING CERTIFICATION, AS REPORTED IN THE SAMPLE SCHOOLS

Table 68 provides a profile of teaching certification held by industrial arts teachers, as reported by the industrial arts chairpersons in the sample schools. Chairpersons were asked to provide the exact numbers of industrial arts teachers in their schools who: (1) held active certification or license for industrial arts, (2) held emergency or provisional certification or license in industrial arts, and (3) held active teacher certification or license but no endorsement in industrial arts. The percentage of teachers who held active endorsement in industrial arts in each of the three samples of schools surveyed ranged from 92.7% to 93.7%. The percentage of teachers who held emergency or temporary certification or endorsement ranged from 3.1% to 3.4%, in contrast with a range of 0.91% to 1.1% obtained from supervisors' data. The percentage of teachers who held no certification or endorsement in industrial arts ranged from 2.5% to 3.9% in the schools surveyed, in contrast with 0.79% to 1.1% obtained from supervisors' data. Although these differences are relatively small, they

would represent a large difference in the number of teachers if the percentages truly applied to the total teacher population.

6.4 AVERAGE NUMBER OF TEACHERS PER SCHOOL

Data obtained from chairpersons indicated an average of 2.8 teachers with active endorsement in industrial arts were employed in 1978-79 in the random sample school. The AIASA sample schools had an average of 2.4 teachers holding active certification with endorsement in industrial arts. The exemplary sample schools had 4.2 teachers with active certification per school. Although the exemplary sample schools had a higher average number of industrial arts teachers than did the random and AIASA sample schools, it is interesting to note that a slightly smaller percentage of the total number of industrial arts teachers in the exemplary sample held active certification with endorsement in industrial arts. The differences in these averages cannot be explained by the difference in the sizes of the schools in the three samples, as the following breakdown of the data indicates.

In each category of school size, shown in Table 69, the exemplary sample schools had a higher average number of industrial arts teachers with active teacher certification or license for industrial arts than did the random or AIASA sample schools. The random sample schools had the same or a greater average number of fully certified teachers per school than the AIASA sample schools. As would be expected, the differences between the three samples were the most noticeable in schools which had 1,000 or more students.

6.5 DEGREES HELD BY INDUSTRIAL ARTS TEACHERS

Of those teachers for whom educational attainment was reported by the industrial arts chairperson (see Table 70), between 41.9% and 48.3% held a master's degree. In addition, between 2.2% and 3.4% held a specialist's certificate and less than 1% of the teachers held doctorates. The random sample contained the largest percentage (3.3%) of teachers who had no degree. Overall, a slightly larger percentage of the exemplary sample teachers held advanced degrees than either the random or AIASA sample teachers.

TABLE 68

Levels of Certification of Teachers, Reported by Chairpersons

How many of the industrial arts teachers in your department hold the following type of state teaching certificate?

LEVELS OF CERTIFICATION	RANDOM SAMPLE N=636		AIASA SAMPLE N=326		EXEMPLARY SAMPLE N=168	
	# OF TCHRS	% OF TCHRS	# OF TCHRS	% OF TCHRS	# OF TCHRS	% OF TCHRS
Active - endorsed	1,757	93.7	786	94.4	712	92.7
Emergency or temp.	63	3.4	26	3.1	26	3.4
Active - but not endorsed	56	3.0	21	2.5	30	3.9
TOTALS	1,875	100.0	833	100.0	768	100.0

6.6 PERSONS EARNING BACHELOR'S DEGREES WITH TEACHING CERTIFICATION IN INDUSTRIAL ARTS

Table 71 reports the number and percentage of male and female graduates earning bachelor degrees in industrial arts from 1975-76 to 1977-78. According to data reported by state supervisors, little variation existed in the percentages of male and female graduates who earned bachelor's degrees over the three-year period. For 1975-76, thirty-eight state supervisors reported a total of 3,423 males earned bachelor's degrees in industrial arts; thirty-five supervisors indicated ninety-one females earned bachelor's degrees. For 1976-77, forty supervisors reported 3,587 males and 112 females earned bachelor degrees in industrial arts. Thirty-nine supervisors reported that in 1977-78, 3,629 males and 119 females obtained bachelor degrees in industrial arts. Therefore, the supply of new industrial arts teachers appears to have increased over those three years.

6.7 INDUSTRIAL ARTS TEACHING VACANCIES FROM 1976-77 TO 1978-79, BY STATE

Table 72 shows that there were at least 812 vacant industrial arts teaching positions in twenty-seven states in 1976-77. The states of

TABLE 69

Teacher Certification by School Size

PART A: Active Teacher Certification or License for Industrial Arts

SCHOOL SIZE	N OF TCHR	MEAN	S.D.	N	N OF TCHR	MEAN	S.D.	N	N OF TCHR	MEAN	S.D.	N
No data	166	2.8	2.0	60	82	1.7	1.0	48	88	5.2	5.8	17
1-499	264	1.5	0.8	175	50	1.5	0.6	33	51	2.0	1.0	26
500-999	461	2.3	1.4	201	208	1.8	1.6	114	166	3.0	1.4	55
1000-1499	447	3.8	2.1	118	175	2.7	1.6	65	147	4.3	2.3	34
1500-2499	341	4.9	2.4	69	216	3.9	2.2	55	184	6.8	2.5	27
2500 plus	77	5.9	2.3	13	55	5.0	2.2	11	76	8.4	3.6	9
TOTALS	1756	2.8	2.0	636	786	2.4	1.6	326	712	4.2	3.1	168

PART B: Teachers Holding Emergency or Provisional Certification in IA

SCHOOL SIZE	N OF TCHR	MEAN	S.D.	N	N OF TCHR	MEAN	S.D.	N	N OF TCHR	MEAN	S.D.	N
No data	5	0.1	0.4	60	7	0.1	0.9	48	8	0.5	1.5	17
1-499	10	0.1	0.3	175	1	0.03	0.2	33	1	0.04	0.2	26
500-999	21	0.1	0.4	201	7	0.1	0.3	114	2	0.04	0.2	55
1000-1499	18	0.2	0.6	118	6	0.1	0.3	65	6	0.2	0.6	34
1500-2499	7	0.1	0.3	69	4	0.1	0.3	55	9	0.3	1.0	27
2500 plus	2	0.2	0.6	13	1	0.1	0.3	11	0	0.0	0.0	9
TOTALS	63	0.1	0.4	636	26	0.1	0.4	326	26	0.2	0.7	168

PART C: Active Certification or License, But Not for Industrial Arts

SCHOOL SIZE	N OF TCHR	MEAN	S.D.	N	N OF TCHR	MEAN	S.D.	N	N OF TCHR	MEAN	S.D.	N
No data	1	0.02	0.1	60	3	0.1	0.3	48	3	0.2	0.5	17
1-499	14	0.1	0.3	175	2	0.1	0.2	33	2	0.1	0.4	26
500-999	21	0.1	0.3	201	3	0.02	0.2	114	11	0.2	0.6	55
1000-1499	8	0.1	0.4	118	6	0.1	0.3	65	6	0.2	0.6	34
1500-2499	7	0.1	0.3	69	7	0.1	0.5	55	8	0.3	0.8	27
2500 plus	5	0.4	1.1	13	0	0.0	0.0	11	0	0.0	0.0	9
TOTALS	56	0.1	0.4	636	21	0.1	0.3	326	30	0.2	0.6	168

TABLE 70

Degrees Held by Industrial Arts Teachers, Reported by Chairpersons

Below, mark the highest educational degree that EACH of the industrial arts teachers in your department has earned.

DEGREES	RANDOM SAMPLE		AIASA SAMPLE		EXEMP SAMPLE	
	N OF TCHRS	% TCHRS	N OF TCHRS	% TCHRS	N OF TCHRS	% TCHRS
None	61	3.3	5	0.6	10	1.4
Bachelor's	978	52.2	458	55.0	326	46.8
Master's	787	42.0	349	41.9	340	48.3
Ed. Specialist	42	2.2	20	2.4	24	3.4
Doctor's	4	0.2	0	0.0	4	0.6
TOTAL TEACHERS	1872	100.0	832	100.0	704	100.0
N OF CASES valid	642		328		168	
missing	77		25		23	

TABLE 71

Bachelor's Degrees Awarded in Industrial Arts with Teaching Certification from 1975-76 through 1977-78, by Sex

YEAR	MALES			FEMALES			PARTIAL TOTAL NUMBER OF DEGREES
	N of DEG	N of STATE	% of DEG	N of DEG	N of STATE	% of DEG	
1975-76	3423	38	.	91	35	.	3514
1976-77	3587	40	97	112	40	3.0	3699
1977-78	3629	39	96.8	119	39	3.2	3748

Texas (265), Indiana (89), and California (84) reported the greatest number of vacancies. In 1977-78, there were 838 vacant industrial arts positions in thirty-two states; in 1978-79, there were 1,077 vacant positions in thirty-four states.

From the total numbers of vacant positions reported in Table 72, it is apparent that the number of teaching vacancies and the number of states with vacancies are on the increase. Only eight of the states reporting indicated that there were no teaching vacancies over the three-year period. The numbers of vacant positions fluctuated in several states but overall the number of vacancies increased. In the period from 1977-78 to 1978-79, for example, seven states experienced a decline in the number of vacant positions, but twenty-one states experienced increases.

6.8 PERCENTAGE OF TOTAL SCHOOL FACULTY WHO TEACH INDUSTRIAL ARTS

On the average, the exemplary sample schools had 62.7 teachers on the faculty, and of those, four teachers taught industrial arts. Table 73 shows that the average faculty size for the AIASA sample schools was less than two teachers fewer in the total number of teachers and the number of industrial arts teachers was also smaller by almost the same number. The average number of total faculty for the random sample schools was smaller than the average for the AIASA sample schools by ten teachers, but the average number of industrial arts teachers was slightly higher.

TABLE 72

Vacant Industrial Arts Positions from 1976-77 to 1978-79 by State, Reported by State Supervisors

STATE	1976-77 VACANCIES	1977-78 VACANCIES	1978-79 VACANCIES
ALABAMA	0	0	0
ALASKA	.	.	.
ARIZONA	10	8	11
ARKANSAS	3	5	1
CALIFORNIA	84	61	65
COLORADO	0	0	0
CONNECTICUT	.	.	6
DELAWARE	0	1	1
DIST OF COL	5	3	8
FLORIDA	0	10	25
GEORGIA	40	30	40
HAWAII	.	1	0
IDAHO	0	0	0
ILLINOIS	.	.	110
INDIANA	89	75	80
IOWA	16	22	29
KENTUCKY	6	4	0
LOUISIANA	35	50	75
MARYLAND	14	17	20
MASSACHUSETTS	.	.	.
MICHIGAN	.	.	.
MINNESOTA	0	0	5
MISSISSIPPI	10	12	14
MISSOURI	42	47	55
MONTANA	2	2	3
NEBRASKA	4	6	13
NEVADA	0	0	0
NEW HAMPSHIRE	.	.	.
NEW JERSEY	0	0	0
NEW MEXICO	5	6	6
NEW YORK	60	50	40
NORTH CAROLINA	12	16	19
NORTH DAKOTA	4	6	6
OHIO	0	15	28
OKLAHOMA	5	8	10
OREGON	5	8	3
PENNSYLVANIA	50	40	30
PUERTO RICO	9	8	11
SOUTH CAROLINA	.	.	.
SOUTH DAKOTA	.	.	.
TENNESSEE	10	12	6
TEXAS	265	270	290
UTAH	0	0	0
VERMONT	0	0	0
VIRGINIA	12	20	24
WASHINGTON	0	0	0
WEST VIRGINIA	.	.	18
WISCONSIN	0	10	10
WYOMING	3	5	7
VIRGIN ISLANDS	12	10	8
TOTALS	812	838	1077
# OF STATES	40	41	44

TABLE 73

Percentage of Teachers in Total School Faculty who Teach Industrial Arts

SAMPLES	MEAN OF IA STAFF	S.D. FOR IA STAFF	% IA TO TOT STAFF	MEAN OF TOT STAFF	S.D. FOR TOT STAFF	N OF VALID CASES
Random sample	2.77	2.03	5.4	51.12	31.20	576
AIASA sample	2.45	2.08	4.0	61.16	30.44	277
Exemplary sample	4.08	2.82	6.5	62.73	35.35	154

6.9 AVERAGE LENGTH OF SERVICE

The average number of years of teaching experience for industrial arts teachers was 11.5 years in the random sample, 9.9 years in the AIASA sample, and 11.5 years in the exemplary sample.

6.10 LENGTH OF TEACHING CONTRACTS

One of the major differences between teaching industrial arts and teaching in areas such as agriculture is the length of teacher contracts. Since federal legislation was passed in the first quarter of this century, some vocational teachers have been able to obtain contracts extending up to twelve months. The extended period of employment and the concurrent increase in salary are viewed as avenues for attracting more teachers into the profession and for retaining more teachers who are already employed. The following two subsections provide data on the percentages of teachers in the three school samples who held four categories of teaching contracts and on principals' views on the length of contract that industrial arts teachers should have.

6.10.1 Length of Contracts for Industrial Arts Teachers

Table 74 shows the percentage of teachers with four categories of teaching contracts. The random sample teachers had the highest percentage (56.5%) of nine to nine and one-half month contracts. The random and AIASA samples reported the higher percentages of teachers with twelve month contracts. Teachers in the AIASA sample held by far

the highest percentages of ten to ten and one-half (42.3%) and eleven to eleven and one-half (16.3%) month contracts and the lowest percentage of nine to nine and one-half month contracts. The percentages of teachers in the four categories of contracts for the exemplary sample schools were similar to those in the random sample schools.

TABLE 74

Percentage of Teachers with Different Lengths of Teaching Contracts, Reported by Principals

How many of your industrial arts teachers have the following types teaching contracts?

SAMPLES	9-9 1/2 MONTH CONTRACT			10-10 1/2 MONTH CONTRACT			11-11 1/2 MONTH CONTRACT			12 MONTH CONTRACT		
	% TCH	N TCH	N SCH	% TCH	N TCH	N SCH	% TCH	N TCH	N SCH	% TCH	N SCH	N SCH
Random	56.5	977	390	36.3	628	235	2.4	42	29	4.7	82	34
AIASA	37.1	287	109	42.3	327	135	16.3	126	83	4.2	33	25
Exemplary	56.1	388	105	39.2	271	71	3.0	21	10	1.5	11	7

6.10.2 Opinions of Principals on Length of Teaching Contracts

The opinion of the majority of the principals (see Table 75) in the random (75.4%) and exemplary (69.0%) samples indicated industrial arts teachers should be given the same length contract as other teachers. About one-half (48.4%) of the principals in the AIASA sample schools thought industrial arts teachers should be given extended contracts.

A comparison of the responses of junior and senior high school principals, shown in Table 76, indicated that there were no differences of opinion on the length of contract that industrial arts teachers should be given. Although a large majority of both the junior and senior high principals in the random sample thought the length of contracts should be the same as that of other teachers, a larger percentage of the senior and combination junior/senior high principals

TABLE 75

Opinions of Principals on Length of Contracts Industrial Arts Teachers Should be Given

In your opinion, what length of contract should the industrial arts teacher be given?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMPLARY SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
Extended	139	19.3	21.7	154	43.6	48.4	50	26.2	28.7
Same as other teachers	43	67.2	75.4	150	42.5	47.2	120	62.8	69.0
No opinion	19	2.6	3.0	14	4.0	4.4	4	2.1	2.3
missing	78	10.8	-	35	9.9	-	17	8.9	-
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

thought the contracts should be extended than the data in the previous table would indicate. A similar difference was noted in the responses of the exemplary sample principals. The principals of the AIASA sample schools were nearly evenly divided between the same length of contract and extended contracts for the three types of schools. As before, a much larger percentage of principals in the AIASA sample in all three types of schools thought industrial arts teachers should be on extended contracts.

6.11 PROFESSIONAL INVOLVEMENT OF INDUSTRIAL ARTS TEACHERS

Table 77 provides a profile of eleven professional organizations in which industrial arts chairpersons held membership in 1978-79. In all three samples, a majority of the chairpersons were members of local, state, and national education associations, as well as state industrial arts associations. The majority of chairpersons in the random sample were members of local education associations (70.0%), the National Education Association (62.4%), state education associations (54.3%), and state industrial arts associations (53.9%). The majority

TABLE 76

Views of Junior and Senior High School Principals on the Length of Contracts Teachers Should be Given

In your opinion, what length of contract should industrial arts teachers be given?

TYPE* OF SCHOOL	RANDOM SAMPLE N=577			AIASA SAMPLE N=256			EXEMP SAMPLE N=154		
	TYPE CONTRACT**			TYPE CONTRACT**			TYPE CONTRACT**		
	EXT	SAME	NO OPN	EXT	SAME	NO OPN	EXT	SAME	NO OPN
High school	65 25%	191 74%	1 0.4%	63 50%	57 45%	6 5%	27 34%	52 65%	1 1%
Junior high	22 13%	146 84%	5 3%	41 45%	46 51%	4 4%	7 21%	25 74%	2 6%
Both junior and senior	40 27%	101 69%	6 4%	17 44%	18 46%	4 10%	13 33%	27 68%	0 0%
COLUMN TOTAL	127 22%	438 76%	12 2%	121 47%	121 47%	14 6%	47 31%	104 68%	3 2%

*Method of determining type: (1) if enrollments were reported for grade 11 the school was considered to be a senior high school; (2) if enrollments were reported for grade 7 the school was considered to be a junior high school; and (3) if enrollments were reported for grades 7 and 11 the school was considered to be a combination.

**Percentages are rounded to whole percents.

of chairpersons in the AIASA sample were members of state industrial arts associations (87.8%), local education associations (71.9%), the American Industrial Arts Association (66.1%), the National Education Association (61.2%), and local industrial arts associations (56.3%). The majority of the chairpersons in the exemplary sample held memberships in state industrial arts associations (82.0%), local education associations (73.3%), the National Education Association (63.4%), the American Industrial Arts Association (54.7%), and state education associations (54.7%). More chairpersons in exemplary than in random or AIASA sample schools belonged to Epsilon Pi Tau, the international honorary professional fraternity for industrial arts. A higher percentage of chairpersons from the AIASA and exemplary samples were mem-

bers of industrial arts organizations and a smaller percentage were involved in teachers' unions than teachers from the random sample. Less than one-fourth (21.9%) of the random sample chairpersons reported they were members of the American Industrial Arts Association; less than one-third (31.7%) belonged to local industrial arts associations. Less than 1% of the respondents in the AIASA sample indicated they did not belong to any of the eleven organizations cited in the questionnaire. In the random sample, 5.6% of the chairpersons and in the exemplary sample, 3.5% of the chairpersons were not members of the organizations cited.

An additional question was asked to find out how industrial arts teachers compared with other teachers in terms of professional involvement. Table 78 shows that more than 50% of the industrial arts chairpersons in all three samples believed industrial arts teachers were as professionally involved as other teachers in their schools. More than 30% of the chairpersons from the AIASA and exemplary samples felt industrial arts teachers were more involved than other teachers in their schools. Less than 16% of the chairpersons felt that their industrial arts teachers were less professionally involved than other teachers in their schools.

6.12 USE OF ADVISORY COMMITTEES

As Table 79 indicates, advisory committees were not used by the majority of the industrial arts programs surveyed. When asked if there was an advisory committee in their school system, only 17% of the random sample, 26.9% of the AIASA sample, and 30.4% of the exemplary sample chairpersons reported that there was an advisory committee. This indicates there has been some small degree of placed on advisory committees by industrial arts educators. Industrial arts educators have traditionally placed less emphasis on advisory committees than other vocational educators who, historically, have strongly recommended the use of advisory committees.

In the sixty-four random sample schools that reported on the numbers of male and female advisory committee members, the average number of males was found to be 5.5 per committee, while 1.1 females, on the average, were found per committees. The average number of males in

TABLE 77

Membership in Professional Organizations, Reported by Industrial Arts Chairpersons

You are currently a member of which of the following professional education associations? (Mark as many as apply.)

ORGANIZATIONS	RANDOM SAMPLE		AIASA SAMPLE		EXEMPLARY SAMPLE	
	COUNT	% CASES	COUNT	% CASES	COUNT	% CASES
Epsilon Pi Tau	96	14.9	48	14.7	47	27.3
Iota Lambda Sigma	14	2.2	20	6.1	11	6.4
Local IA assoc	204	31.7	184	56.3	79	45.9
State IA assoc	347	53.9	287	87.8	141	82.0
AVA, IA division	56	8.7	108	33.0	31	18.0
AIAA	141	21.9	216	66.1	94	54.7
Local educ assoc	451	70.0	235	71.9	126	73.3
State educ assoc	350	54.3	195	59.6	94	54.7
Local union	155	24.1	25	7.6	26	15.1
AFT	63	9.8	9	2.8	13	7.6
NEA	402	62.4	200	61.2	109	63.4
None	36	5.6	3	0.9	6	3.5
N of CASES valid	644		327		172	
missing	75		26		19	

the fifty-four AIASA and thirty-three exemplary sample schools that reported data were higher (6.8 and 6.5, respectively) than in the random sample schools, as were the averages for the numbers of females (1.4 and 1.5, respectively).

6.13 ACTIVITIES UNDERTAKEN BY THE INDUSTRIAL ARTS FACULTY DURING THE PAST FIVE YEARS

The industrial arts chairpersons were asked to indicate how many of a number of activities had been undertaken by the industrial arts faculty during the past five years. Their responses are displayed in

TABLE 78

Industrial Arts Teachers Compared to Other Teachers Reported by Industrial Arts Chairpersons

In your opinion, how do industrial arts teachers in your school compare in terms of professional involvement with respect to other teachers in the school?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMPLARY SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
Less involved	100	13.9	15.5	48	13.6	14.6	21	11.0	12.2
About same	439	61.1	68.1	182	51.6	55.3	90	47.1	52.3
More involved	106	14.7	16.4	99	28.0	30.1	61	31.9	35.5
Missing	74	10.3	-	24	6.8	-	19	9.9	-
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

TABLE 79

Use of Advisory Committees, Reported by Chairpersons

Is there an industrial arts advisory committee in your school system?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMP SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
Yes	122	17.0	17.0	95	26.9	26.9	58	30.4	30.4
No	522	72.6	72.6	230	65.2	65.2	111	58.1	58.1
Missing	75	10.4	10.4	28	7.9	7.9	22	11.5	11.5
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

Table 80. Activities which were undertaken in a majority of schools reporting were: (1) actively recruiting females for industrial arts class and (2) adding one or more laboratory-type courses. The activity most often cited in the AIASA sample schools was the establishment of an industrial arts student club. This is not surprising, given the rapid growth of student organizations, but it does indicate that many (84.1%) of the schools in the AIASA sample initiated student clubs since 1974.

In approximately one-third of the random and AIASA sample schools and 44.4% of the exemplary sample schools, a new faculty position was secured. The next most frequently cited activity for all three samples was attending inservice workshops concerning handicapped students. About thirteen percent more of the exemplary than random sample chairpersons reported their faculty had participated in these workshops. About one-fourth of the chairpersons (28.4% of the exemplary, 29.0% of the AIASA, and 21.5% of the random sample) indicated industrial arts teachers in their schools had participated in workshops concerning sex-equity. In all three samples, the activity least often undertaken was that of adding one or more non-laboratory courses.

In conclusion, the data indicate that a larger percentage of the exemplary sample schools' faculties were involved in the activities included in the questionnaire in all but two categories (initiating student clubs and attending inservice workshops concerning sex-equity). Although efforts had been made in each category by some schools in each sample, it appears that more of the faculties were involved in activities related to sex-equity (workshops and recruitment) than to accommodating handicapped (workshops and modifications) or gifted and talented (workshops and modifications) students, in that order. While a majority of schools in all three samples added one or more laboratory- type courses, with an accompanying increase in the number of faculty, only a small percentage of schools added non-laboratory type courses.

TABLE 80

Faculty Activities During Last Five Years, Reported by Industrial Arts Chairpersons

Please indicate which of the following activities have been undertaken by the industrial arts faculty during the past five years.

FACULTY ACTIVITIES	RANDOM SAMPLE		AIASA SAMPLE		EXEMP SAMPLE	
	COUNT	% CASES	COUNT	% CASES	COUNT	% CASES
New faculty position secured	184	31.9	112	34.9	75	44.4
Added one/more laboratory-type course	348	60.4	187	58.3	122	72.2
Added one/more non-laboratory type course	68	11.8	26	8.1	21	12.4
Actively recruited female students for IA	371	64.4	214	66.7	111	65.7
Made modifications for gifted and talented	87	15.1	40	12.5	37	21.9
Made program modifications to accommodate the handicapped	121	21.0	51	15.9	48	28.4
Initiated an IA student club	91	15.8	270	84.1	45	26.6
Attended workshop dealing with sex-equity	124	21.5	93	29.0	48	28.4
Attended workshop dealing with handicapped	157	27.3	104	32.4	69	40.8
Attended workshop dealing with gifted and talented	103	17.9	54	16.8	34	20.1
N of CASES valid	576		321		169	
missing	143		32		22	

6.14 NEED FOR INSERVICE TRAINING FOR INDUSTRIAL ARTS TEACHERS

Forty-five industrial arts supervisors indicated they felt that first-year industrial arts teachers and teachers with provisional certification should have in-service training. Thirty-nine supervisors felt that teachers with certification other than industrial arts need in-service training, and thirty-seven supervisors felt that teachers without any certification need in-service training in industrial arts.

6.15 LOCAL SUPERVISION OF INDUSTRIAL ARTS EDUCATION

As illustrated in Table 81, the majority of the AIASA and exemplary sample schools (69.6% and 64.1%, respectively) had a local industrial arts supervisor (other than principals) in their school systems. Less than 50% the random sample schools (44.5%) reported having an industrial arts supervisor other than the principal.

TABLE 81

Incidence of Having a Local Industrial Arts Supervisor, Reported by Principals

Does your school system have a local industrial arts supervisor (other than the principal)?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMPLARY SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
Yes	305	42.4	44.5	234	66.3	69.6	116	60.7	64.1
No	381	53.0	55.5	102	28.9	30.4	65	34.0	35.9
Missing	33	4.6	-	17	4.8	-	10	5.2	-
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

Chapter 7
INDUSTRIAL ARTS FACILITIES

7.1 INTRODUCTION

The industrial arts facilities available in schools are important determinants of the kinds of courses that can be offered. Decisions must be made regarding how to provide the type of laboratories needed to fulfill the program structure and objectives, how to build and equip the labs, and how many different kinds of industrial arts courses to offer. Once made, these decisions may be difficult to alter. The Standards for Industrial Arts Education Programs Project sought to determine what kinds of facilities were in existence, what facilities were being planned, and how existing facilities had been modified to accommodate students with special needs. Related data are discussed in Chapter 4, sections on handicapped/special-needs students, and Chapter 8, sections on expenditures.

7.2 FACILITIES AVAILABLE IN SCHOOLS

Table 82 and Table 83 contain the responses of industrial arts chairpersons who were asked to indicate what kinds of facilities were available in their schools and whether those facilities were general (multiple area) or unit (single area) labs. Since the terms "general lab" and "unit lab" were not precisely defined in the survey instruments, the data summarized in this section may not reflect the actual number of specific industrial arts facilities in their schools. Nevertheless, the figures are valuable as a comparison of the random, AIASA, and exemplary sample schools and as an overview of the kinds of industrial arts facilities that exist and are being planned.

7.2.1 General Laboratories

The four general laboratories (see Table 82) most frequently cited were general woods, drafting, general industrial arts, and metals. Of interest was the prevalence of these four general areas; each area appeared to be offered by approximately one-half of the schools in the three samples.

TABLE 82

General Laboratory Facilities Available in Schools, Reported by Industrial Arts Chairpersons

Which of the following facilities (general lab) are available in your school?

LABORATORIES	RANDOM SAMPLE		AIASA SAMPLE		EXEMP SAMPLE	
	COUNT	% CASES	COUNT	% CASES	COUNT	% CASES
Construction	149	29.7	114	43.2	59	41.0
Crafts	137	27.3	69	26.1	50	34.7
Drafting	281	56.1	158	59.8	83	57.6
Electricity/ electronics	166	33.1	80	30.3	60	41.7
Gen ind arts	247	49.3	138	52.3	64	44.4
Graphic Arts	108	21.6	53	20.1	59	41.0
Home mechanics	49	9.8	51	19.3	24	16.7
Industrial mat. and processes	28	5.6	7	2.7	7	4.9
Manufacturing	49	9.3	69	26.7	36	25.0
Metals	279	55.7	123	46.6	83	57.6
Plastics	80	16.0	44	16.7	41	28.5
Power/automotive mechanics	146	29.1	62	23.5	60	42.4
Research and development	5	1.0	9	3.4	8	5.6
Service industry	3	0.6	3	1.1	1	0.7
General woods	308	61.5	159	60.2	91	63.2
Exploring tech	23	4.6	31	11.7	6	4.2
American ind	23	4.6	21	8.0	8	5.6
Finishing mat and methods	53	10.6	28	10.6	14	9.7
Other ind arts	29	5.8	23	8.7	22	15.3
N OF CASES valid	501		264		144	
missing	218		89		47	

There were differences worth noting between the random, AIASA, and exemplary samples. Five general laboratories were much more common among those schools having exemplary industrial arts programs: electricity/electronics, graphic arts, plastics, power/automotive mechanics, and research and development. The random sample had a smaller percentage of schools with construction, manufacturing, and home mechanics laboratories than did schools in the other two samples. The AIASA sample schools had higher percentages of schools with construction, manufacturing, general industrial arts, home mechanics, exploring technology, and American industries laboratories than the random and exemplary samples.

7.2.2 Unit Laboratories

Table 83 contains the chairpersons' listings of the unit laboratories available in the schools. This table gives a more precise picture of the industrial arts facilities in the three samples of schools surveyed. Perhaps the most striking feature of the table is its length. Even discounting the category "other," more than fifty kinds of unit laboratories were identified. The most frequently listed unit laboratories were mechanical drawing, architectural drafting, drafting, general woods, and general metals. These laboratories were identified by over 39% schools in all three samples. General woods was cited by two-thirds of the respondents.

The data on unit laboratories are useful for more accurately describing the major subject areas identified in the previous section. Electricity, for example, appeared to be a more common unit specialty than electronics. In the area of drafting and design, architectural drafting and mechanical drawing appeared to dominate. Unit laboratories in the area of metals were more evenly distributed, with sheet metal, welding, foundry, and machining being the unit laboratories most often listed.

TABLE 83

Unit Laboratory Facilities Available in Schools Reported by Industrial Arts Chairpersons

Which of the following facilities (unit labs) are available in your school?

UNIT LABS	RANDOM SAMPLE		AIASA SAMPLE		EXEMP SAMPLE	
	COUNT	% CASES	COUNT	% CASES	COUNT	% CASES
Art metals	71	12.9	28	10.4	22	15.9
Ceramics	89	16.1	29	10.8	27	19.6
Crafts	32	5.8	18	6.7	12	8.7
Industrial crafts	31	5.6	10	3.7	10	7.2
Leather	109	19.7	62	23.1	25	18.1
Textiles	11	2.0	2	0.7	4	2.9
Jewelry/lapidary	42	7.6	15	5.6	15	10.9
Other industrial crafts	25	4.5	15	5.6	11	8.0
Architectural drafting	224	40.6	106	39.6	68	49.3
Descriptive geometry	21	3.8	10	3.7	10	7.2
Drafting	255	46.2	118	44.0	74	53.6
Drafting technology	54	9.8	28	10.4	15	10.9
Engineering drawing	71	12.9	29	10.8	23	16.7
Industrial design	22	4.0	8	3.0	7	5.1
Mechanical drawing	298	54.0	131	48.9	64	46.4
Technical illustration	23	4.2	20	7.5	14	10.1
Other drafting	29	5.3	15	5.6	7	5.1
Electricity	164	29.7	54	20.1	37	26.8
Electricity electronics	114	20.7	50	18.7	45	32.6
Electronics	60	10.9	19	7.1	25	18.1
Other electricity-electronics	17	3.1	4	1.5	7	5.1
Graphic arts	124	22.5	48	17.9	49	35.5

continued

Table 83 continued.

Photography	119	21.6	67	25.0	49	35.5
Photolithography	33	6.0	8	3.0	11	8.0
Printing	89	16.1	32	11.9	31	22.5
Communications technology	24	4.3	16	6.0	17	12.3
Other graphic arts	29	5.3	15	5.6	10	7.2
Fluid power	12	2.2	4	1.5	3	2.2
Industrial materials	11	2.0	2	0.7	6	4.3
Industrial materials and processes	18	3.3	9	3.4	10	7.2
Industrial processes	7	1.3	3	1.1	4	2.9
Instrumentation	2	0.4	0	0.0	0	0.0
Numerical control	2	0.4	0	0.0	0	0.0
Other industrial materials and processes	3	0.5	2	0.7	3	2.2
Manufacturing	51	9.2	49	18.3	20	14.5
Production technology	15	2.7	12	4.5	5	3.6
General metals	282	51.1	112	41.8	70	50.7
Metal machining	117	21.2	52	19.4	41	29.7
Metal technology	51	9.2	25	9.3	14	10.1
Sheet metal	174	31.5	67	25.0	43	31.2
Welding	230	41.7	78	29.1	50	36.2
Foundry	129	23.4	50	18.7	38	27.5
Other metals	28	5.1	12	4.5	6	4.3
Plastics	96	17.4	42	15.7	32	23.2
Plastics technology	13	2.4	10	3.7	9	6.5
Other plastics	9	1.6	8	3.0	5	3.6
Automotive mechanics	124	22.5	29	10.8	30	21.7
Power-automotive mechanics	48	8.7	17	6.3	16	11.6
Power mechanics	118	21.4	50	18.7	38	27.5
Transportation	8	1.4	13	4.9	4	2.9

Continued

Table 83 continued.

Power-transportation	19	3.4	18	6.7	12	8.7
Other power-automotive mech	23	4.2	2	0.7	8	5.8
General woods	426	77.2	180	67.2	91	65.9
Woods technology	127	23.0	54	20.1	32	23.2
Other woods	74	13.4	29	10.8	18	13.0
N OF CASES valid	522		268		138	
missing	167		85		53	

The unit laboratory data from Table 83 may also bring into sharper focus the differences between the facilities in the random and exemplary sample schools. In the area of graphic arts, for example, photography and printing laboratories tended to be more frequently listed by the exemplary schools than by the schools in the other two samples. The most obvious difference was in communication technology, which was three times more common as a unit laboratory in the exemplary than in the random sample schools. Similarly, in the broad area of power/automotive mechanics, it was the existence of labs for power-transportation, rather than for power/automotive mechanics, that tended to differentiate more sharply between the exemplary and random samples. Finally, while the percentage of schools in the random sample listing unit laboratories in plastics was nearly as high as that in the exemplary sample, a far greater percentage of exemplary schools indicated they had unit laboratories in plastics technology.

7.3 DESIGNING AND EQUIPPING LABORATORIES TO ACCOMMODATE THE HANDICAPPED STUDENT

A portion of this survey focused attention on changes made to accommodate handicapped students. Over 69% of the chairpersons (see Table 84) indicated no changes had been made in the design of their laboratories or equipment to accommodate handicapped students. Where modifications had been made, provision of a barrier-free environment was the most frequently cited category, with a greater percentage of schools in the exemplary sample (23.1%) making this modification than

those in the random sample (13.6%) or the AIASA sample (13.1%). Otherwise, there appeared to be relatively little difference between the three samples regarding specific provision for handicapped students.

TABLE 84

Special Efforts to Accommodate the Handicapped as Reported by Industrial Arts Chairpersons

What special efforts have been taken in the designing and equipping of your laboratory to accommodate the handicapped student?

SPECIAL EFFORTS	RANDOM SAMPLE		AIASA SAMPLE		EXEMP SAMPLE	
	COUNT	% CASES	COUNT	% CASES	COUNT	% CASES
Barrier-free environment	84	13.6	42	13.1	39	23.1
Modified machines	15	2.4	9	2.8	6	3.6
Modified tool panels	20	3.2	8	2.5	6	3.6
Enlarged access areas	50	8.1	22	6.9	6	3.6
Special restroom facilities	40	6.5	28	8.8	16	9.5
Modified storage areas	12	1.9	8	2.5	6	3.6
Nothing changed	484	78.4	249	77.8	117	69.2
Other	21	3.4	13	4.1	9	5.3
N OF CASES valid	617		320		169	
missing	102		33		22	

7.4 TYPE AND NUMBER OF INDUSTRIAL ARTS LABORATORIES PLANNED FOR CONSTRUCTION BY 1981

In the interest of identifying possible future trends, state industrial arts supervisors were asked for information regarding plans for future laboratory construction. The fifteen supervisors responding to

this item indicated that a total of 238 general laboratories and 284 unit laboratories were planned for construction during the period from 1979 to 1984. As shown in Table 85, general industrial arts laboratories dominated the general laboratories category, while graphic arts, metals, plastics, and woods together made up more than one-half of the unit laboratories planned for construction.

TABLE 85

Type and Number of Industrial Arts Laboratories Planned for Construction 1979-84, Reported by State Supervisors

UNIT LABORATORIES		
NAME OF LAB	STATES RESPONDING	NO. LAB
Drafting	3	22
Electricity-electronics	2	22
Electronics	1	4
Graphic arts	2	9
Communications	3	10
Other graphic arts	2	60
Industrial materials	1	20
Instrumentation	.	10
Numerical control	1	.
Metals	5	34
Plastics	1	30
Automotive mechanics	2	6
Power-transportation	1	5
Other power-trans	1	16
Woods	4	31
Woods technology	1	5

GENERAL LABORATORIES		
NAME OF LAB	STATES RESPONDING	NO. LAB
Construction	1	.
Crafts	1	1
Drafting	1	10
General industrial arts	11	179
Industrial materials and processes	1	10
Woods	1	2
Other industrial arts	4	*2

N=15

* Due to partial responses.

. Missing data.

7.5 STATE/TERRITORIAL APPROVAL OF NEW INDUSTRIAL ARTS FACILITIES AND MAJOR RENOVATIONS

Twenty-five state supervisors indicated that the industrial arts staff at the state or territorial level approved plans for new industrial arts facilities and major renovations. Twenty-one of the supervisors indicated such approval did not have to be obtained from state-level industrial arts supervisors. In some instances, other designated state-level personnel such as state facility planners reviewed plans for new industrial arts facilities.

Chapter 8
FINANCE

8.1 INTRODUCTION

Prior to 1972, industrial arts received almost no federal vocational funding: programs were funded through local or state agencies. On December 20, 1973 industrial arts became eligible for funding under the amendments of the Vocational Education Act of 1963. The passage of Public Law 94-482 provided legal authority for the administration of funds to industrial arts programs that met the specific criteria of the Act. It became the responsibility of each state or territory to meet guidelines of the Act if it wished to have industrial arts programs receive federal funds.

The following sections contain data about such federally funded programs and other aspects of funding in industrial arts. Data were collected to determine (1) the number of industrial arts programs receiving federal funds by state or territory, (2) grade levels of federally funded industrial arts courses, and (3) the number of programs that were receiving special funding for students with special needs. Data were also collected on (1) supplemental activities for which industrial arts teachers received supplemental pay, (2) annual expenditures for equipment and supplies, and (3) procedures used to provide students with expendable supplies.

8.2 STATE LEVEL FINANCES

The questions discussed in this section were asked of state supervisors. These questions were aimed at determining the number and percentage of schools receiving federal funds for industrial arts courses and at determining the types of industrial arts courses receiving federal funds, by grade level. State and territorial supervisors were also asked whether all industrial arts courses that met the criteria were receiving federal funding.

8.2.1 Number and Percentage of Schools Receiving Federal Funds for IA Courses

Chapter 3 contained data (see Table 20) reported by state industrial arts supervisors on the number of secondary schools with industrial arts programs and those receiving federal funds for industrial arts education programs in 1978-79. A total of 2,050 secondary schools in twenty-one states/territories reported receiving federal funds. Seventeen supervisors indicated that no schools in their states or territories were receiving federal funds. In the twenty states/territories that reported receiving federal monies for industrial arts, 28.9% of the secondary schools with industrial arts programs were receiving federal funds for their programs.

8.2.2 Industrial Arts Courses Receiving Federal Funds, Reported by State Supervisors

The state and territorial supervisors were asked to list the course titles and grade levels of federally funded industrial arts courses. Table 86 shows this data by state and territory. Overall, the courses most frequently cited as receiving federal funds were construction, graphic arts, "other" industrial arts, manufacturing, and drafting. More states had more courses funded at the ninth grade level than at the sixth, seventh, and eighth grades combined. The industrial arts courses that were federally funded primarily at the junior high school level (grades 6-8) were construction, manufacturing, "other" industrial arts, and exploring technology. Courses that were federally funded primarily at the senior high school level (grades 9-12) were graphic arts, drafting, general metals, power mechanics, "other" industrial arts, and electricity-electronics. The federally funded courses at the junior high school level appeared to be more non-traditional than courses funded in the senior high schools. Twenty-four states reported this data: four indicated that they had federally funded courses but data was not available by course title, four states did not respond to the question, and twenty states indicated that no industrial arts courses received federal funds.

TABLE 86

Federally Funded IA Courses by Grade Level, Reported by State Supervisors

COURSE NAME	TOTAL STATES	N of STATES by GRADE LEVELS 6	7	8	9	10	11	12
Construction	14	1	6	7	10	7	1	3
Ceramics	1				1	1	1	1
Crafts	1				1	1	1	1
Industrial Crafts	1				1	1	1	1
Leather	1	1	1	1				
Other Industrial Crafts	1				1	1	1	1
Drafting	11		2	2	8	7	6	7
Mechanical Drawing	2	1	1	1			1	1
Other Drafting	2				1	2	2	2
Electricity	4				2	3	2	3
Electricity-Electronics	7		1	1	6	5	6	6
Electronics	5	1	1	1	3	4	2	3
Other Electricity-Electronics	1							
General Industrial Arts	4		1	1	3	3	3	3
Graphic Arts	14		2	2	10	11	10	11
Photography	2				1	1	1	1
Communications Technology	1				1	1	1	1
Other Graphic Arts	5	1	1	2	4	2		1
General Home Mechanics	2				2	2	2	2
Fluid Power	1				1	1	1	1
Industrial Materials	1				1	1		
Ind Materials and Processes	2				1	1	2	2
Other Ind Materials and Proc	2				2	2	2	2
Manufacturing	12	1	6	6	10	6	2	2
General Metals	8				6	7	6	6
Metal Technology	4		1	1	4	3	3	3
Welding	1						1	1
Other Metals	2					1	1	2
Plastics	4				3	4	3	3
Plastics Technology	2				2	2	2	2
Automotive Mechanics	3				1	2	2	2
Power-Automotive Mechanics	1				1	1	1	1
Power Mechanics	8				5	6	6	7
Power-Transportation	7	1	2	2	6	4	1	2
Other Power-Transportation	5				5	5	4	4
General Woods	6				5	6	5	5
Woods Technology	2				2	2	2	2
Other Woods	1						1	1
American Industry	2		2	2	2	1	1	1
Exploring Technology	3	1	3	3	3			
Other Industrial Arts	13	1	4	3	9	7	6	6

8.2.3 Federal Funds Received for all Eligible Industrial Arts Courses

When asked if all courses in industrial arts that met the criteria were receiving federal funds, thirteen state supervisors indicated they were, thirty supervisors indicated they were not, and seven supervisors did not answer the question. Since the questionnaire used the phrase, "all courses in industrial arts," it is difficult to determine which states received federal funds for some industrial arts courses, but it is clear that not all industrial arts courses that were eligible were receiving federal funds. When asked if all industrial arts courses should be federally funded, thirty-four supervisors indicated they should not, twelve indicated they should, and four did not respond. Once again, the choice of the phrase, "all industrial arts courses," in the questionnaire only allows for the conclusion that the majority of supervisors do not think all industrial arts courses should receive federal funds. This is not to say they thought industrial arts courses should receive federal funds.

8.3 SCHOOL-LEVEL FINANCES

The data presented in this section reflect the responses of the principals and industrial arts chairpersons to questions regarding school-level funding of industrial arts programs. The questions asked were concerned with (1) funds for students with special needs, (2) activities for which industrial arts teachers receive supplemental pay, (3) annual expenditures for equipment and supplies, and (4) procedures used to provide students with expendable supplies.

8.3.1 Funds for Students with Special Needs

The data in Table 87 show that only a small portion of the schools in all three samples received special funds for industrial arts students with special needs. Out of the thirteen categories of special needs listed, two categories (specific learning disabilities and disadvantaged) were cited the most often. Of those schools that indicated special funds were received, a somewhat larger percentage of the schools in the exemplary sample (60.5%) than in the AIASA sample (52.9%) or random (50.7%) sample received special funds for students with specific learning disabilities. Approximately 65% of the AIASA sample schools that responded to this particular survey item indicated

special funds were received for disadvantaged students, while 52% of the random sample schools and 51% of the exemplary sample schools received such funds. Approximately 50% the schools that responded indicated funds were received for students who were mentally retarded. Less than 25% of the schools received funds for students with other special needs. This data obviously may reflect the absence or presence of special-needs students in the schools surveyed as well as the availability of funds.

8.3.2 Activities for Which Industrial Arts Teachers Receive Supplemental Pay

Of the eighteen categories of supplemental pay activities listed in Table 88, the data revealed that a greater percentage of the industrial arts teachers in the three samples received supplemental pay for coaching athletics than for any other activity (random, 48.0%; AIASA, 22.2%; exemplary, 47.2%). One-third of exemplary sample chairpersons indicated their teachers received supplemental pay for work with athletic contests. This was also a relatively frequent activity for which teachers in the other two samples received supplemental pay. In 49.5% of the AIASA sample schools, 32.5% of the random sample schools, and 33.3% of the exemplary sample schools, teachers received no supplemental pay for any activities. A higher percentage of schools in the AIASA sample (16.2%) than in either the random (5.1%) or exemplary (8.3%) samples gave teachers supplemental pay for sponsoring industrial arts student organization activities.

8.3.3 Annual Expenditures for Equipment and Supplies

This section deals with the average annual expenditures for equipment and supplies in industrial arts departments. Table 89 shows the average amount of dollars spent by schools in all three samples and the average amounts spent by schools according to school size. Schools in the exemplary sample spent the highest annual average amounts for both equipment ($4,203) and supplies ($6,652), while those in the AIASA sample spent the lowest annual average amounts for both equipment ($1,806) and supplies ($2,505). In each category of school size the exemplary sample schools reported the highest average amount spent annually for equipment and supplies. The AIASA sample schools

TABLE 87

Funds for Special-Needs Students Received by IA Department, Reported by Industrial Arts Chairpersons

Please indicate if the industrial arts department in your school receives special funds for the following students who are enrolled in industrial arts courses.

STUDENTS WITH SPECIAL NEEDS	RANDOM SAMPLE		AIASA SAMPLE		EXEMP SAMPLE	
	COUNT	% CASES	COUNT	% CASES	COUNT	% CASES
Hard of hearing	24	15.8	12	17.6	4	9.3
Deaf	18	11.8	8	11.8	3	7.0
Visually handicapped	30	19.7	11	16.2	7	16.3
Deaf-blind	16	10.5	7	10.3	3	7.0
Speech impaired	34	22.4	21	30.9	7	16.3
Orthopedically impaired	20	13.2	13	19.1	5	11.6
Specific learning disability	77	50.7	36	52.9	26	60.5
Other health impaired	23	15.1	14	20.6	5	11.6
Mentally gifted and talented	25	16.4	19	27.9	6	14.0
Mentally retarded	72	47.4	32	47.1	24	55.8
Seriously emotionally disturbed	32	21.1	19	27.9	9	20.9
Disadvantaged	79	52.0	44	64.7	22	51.2
Information not available	19	12.5	13	19.1	6	14.0
# OF CASES valid	152		68		43	
missing	567		285		148	

TABLE 88

Activities for Which IA Teachers Receive Supplemental Pay, Reported by Industrial Arts Chairpersons

For which of the following activities do the industrial arts teachers in your school receive supplemental pay?

ACTIVITIES	RANDOM SAMPLE		AIASA SAMPLE		EXEMP SAMPLE	
	COUNT	% CASES	COUNT	% CASES	COUNT	% CASES
IA contests	10	1.5	24	7.2	6	3.3
Athletic contest	182	27.5	48	14.4	61	33.9
Coach athletics	318	48.0	74	22.2	85	47.2
IA club	34	5.1	54	16.2	15	8.3
Club advisor	93	14.0	19	5.7	24	13.3
Supv grounds	25	3.8	8	2.4	9	5.0
Field trips	10	1.5	3	1.5	4	2.2
Stu council adv	48	7.3	15	4.5	18	10.0
School paper adv	41	6.2	15	4.5	21	11.7
Store/concession	11	1.7	3	0.9	5	2.8
Yearbook advisor	59	8.9	18	5.4	23	12.8
Lunch room duty	32	4.8	6	1.8	11	6.1
Class advisor	83	12.5	21	6.3	22	12.2
Homeroom advisor	1	0.2	4	1.2	2	1.1
AV coordinator	23	3.5	11	3.3	6	3.3
School assembly	5	0.8	1	0.3	2	1.1
Maintenance	40	6.0	15	4.5	17	9.4
Bus duty	48	7.3	23	6.9	9	5.0
None	215	32.5	165	49.5	60	33.3
N OF CASES valid	662		333		180	
missing	57		20		11	

reported the lowest average amount spent for equipment and supplies in each category of school size except for schools having 1,500 to 2,499 students. In this category only, the average expenditure for equipment in the random sample schools was slightly lower than that in the AIASA schools ($3,480 compared to $3,518).

8.3.4 Procedures used to Provide Students with Expendable Supplies

Table 90 includes data on the procedures used by industrial arts teachers to provide expendable supplies for students. Industrial arts chairpersons were asked which of four procedures were used most often. The answers revealed that 50.8% of the random sample schools, 49.8% of the AIASA sample schools, and 60.4% of the exemplary sample schools provided some supplies free. The next most frequently cited procedure in all three samples was for students to pay fully for their supplies. Other cited procedures included a minimum fee for supplies and additional student payment for supplies over a standard allotment.

Table 91 contains the responses of chairpersons who were asked what procedures should be used to provide students with expendable supplies. Fully 55.3% of the chairpersons in the random sample, 57.6% of the chairpersons in the AIASA sample, and 68.2% of the chairpersons in the exemplary sample said they thought some supplies should be provided free of charge. The procedure cited next most often was having students pay for supplies. A higher percentage of chairpersons in all three samples thought supplies should be free to students than noted that they currently were.

TABLE 89

Average Annual Expenditures for Equipment and Supplies by School Size, Reported by Chairpersons

Indicate below the average amount spent annually for 1) equipment ... 2) supplies ... in your industrial arts department.

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMPLARY SAMPLE		
	MEAN $	N OF CASES	MISS CASES	MEAN $	N OF CASES	MISS CASES	MEAN $	N OF CASES	MISS CASES
ALL SIZES									
Equipment	2134	603	116	1806	299	54	4203	161	30
Supplies	3762	612	107	2505	314	39	6652	162	29
1-499									
Equipment	1700	168	116	1069	33	54	2952	25	30
Supplies	1889	169	107	1598	33	39	3162	24	29
500-999									
Equipment	1757	191	116	1380	105	54	3934	54	30
Supplies	3164	195	107	1851	111	39	3971	54	29
1000-1499									
Equipment	2547	107	116	2047	61	54	4467	32	30
Supplies	5161	112	107	3190	64	39	8310	33	29
1500-2499									
Equipment	3480	68	116	3518	48	54	4652	26	30
Supplies	7155	68	107	4029	50	39	11593	28	29
2500 plus									
Equipment	6189	13	116	2980	9	54	9211	9	30
Supplies	7923	13	107	4528	10	39	12187	8	29

TABLE 90

Procedures for Providing Expendable Supplies, Reported by Industrial Arts Chairpersons

What procedures do you most often use in providing students with expendable supplies?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMP SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
Some supplies provided free	315	43.8	50.8	157	44.5	49.8	99	51.8	60.4
Students pay a minimum fee	44	6.1	7.1	37	10.5	11.7	5	2.6	3.0
Students pay for supplies	149	20.7	24.0	76	21.5	24.1	34	17.8	20.7
All supplies provided free	92	12.8	14.8	35	9.9	11.1	23	12.0	14.0
Other	20	2.8	3.2	10	2.8	3.2	3	1.6	1.8
missing	99	13.9	-	38	10.8	-	27	14.1	-

TABLE 91

Procedures Suggested by Industrial Arts Chairpersons for Providing Expendable Supplies

In your opinion, what procedures do you think should be used in providing students with expendable supplies?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMP SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
Some supplies provided free	348	48.4	55.3	185	52.4	57.6	116	60.7	68.2
Student pay a minimum fee	61	8.5	9.7	32	9.1	10.0	9	4.7	5.3
Students pay for supplies	129	17.9	20.5	69	19.5	21.5	26	13.6	15.3
All supplies provided free	76	10.6	12.1	29	8.2	9.0	14	7.3	8.2
Other	15	2.1	2.4	6	1.7	1.9	5	2.6	2.9
missing	90	12.5	-	32	9.1	-	21	11.0	-

Chapter 9
EVALUATION IN INDUSTRIAL ARTS EDUCATION

9.1 INTRODUCTION

Opinions about the use of evaluation in industrial arts education were sought from state supervisors, industrial arts chairpersons, and school guidance coordinators. Industrial arts chairpersons were asked to identify specific elements which should be included in an evaluation system for industrial arts. Emphasis was also placed on minimum competency testing, as well as strengths and weaknesses of existing industrial arts programs.

9.2 STRENGTHS AND WEAKNESSES OF INDUSTRIAL ARTS PROGRAMS

Industrial arts chairpersons were asked to judge the strengths and the weaknesses of their programs in terms of course content, facilities, enrollment, administrative support, staffing, methodology, resources, and funding. These elements were selected because they were assumed to represent some of the basic dimensions of industrial arts programs.

The instructions in the question that was asked called for the chairpersons to mark only one response in the area of strengths and one response in the area of weaknesses. However, when the responses were checked on the returned surveys, it was discovered that many of the chairpersons had marked several responses under strengths and several under weaknesses. Rather than lose all of these data, which would have happened if the surveys were processed as intended, the decision was made to change the computer program to allow for multiple marks. The results are, therefore, treated like those from a multiple-response question. Since the responses which were processed are, in effect, from two sets of instructions, caution should be exercised in making judgments from these particular data. This does not mean the data are of no value, but that they are of limited value.

9.2.1 Strengths of Industrial Arts Programs in Public Secondary Schools

Table 92 presents the eight specific factors from which the industrial arts chairpersons identified the greatest strength of their industrial arts programs.

TABLE 92

Greatest Strengths of the Industrial Arts Program, Reported by Industrial Arts Chairpersons

In your opinion, what do you think is the greatest strength ... of the industrial arts program in your school?

GREATEST STRENGTHS	RANDOM SAMPLE		AIASA SAMPLE		EXEMP SAMPLE	
	COUNT	% CASES	COUNT	% CASES	COUNT	% CASES
Course content	282	45.0	153	46.9	85	49.7
Facilities	179	28.6	109	33.4	69	40.4
Enrollment	179	28.6	113	34.7	56	32.7
Administrative support	197	31.5	110	33.7	54	31.6
Staffing	208	33.2	121	37.1	65	38.0
Methodology	135	21.6	80	24.5	43	25.1
Resources	85	13.6	55	16.9	37	21.6
Funding	73	11.7	52	16.0	30	17.5
Other	6	1.0	10	3.1	3	1.8
N OF CASES valid	626		326		171	
missing	93		27		20	

Course content was selected by at least 45% of the industrial arts chairpersons in all three samples as an area of greatest strength in the programs in their schools. The second most often cited strength of the industrial arts program in the random and AIASA samples was staffing. Table 92 shows that 33.2% of the chairpersons from the random sample, 37.1% from the AIASA sample, and 38% from the exemplary sample viewed staffing as an area of greatest strength. A similar

percentage of the industrial arts chairpersons from the exemplary sample (40.4%) selected facilities as a major strength in their programs. Overall, at least one-third of the industrial arts chairpersons from the three samples selected course content, facilities, enrollment, administrative support, and staffing as areas of strength in their programs.

9.2.2 Weaknesses of Industrial Arts Programs in Public Secondary Schools

Table 93 contains responses on the eight categories of greatest weakness in industrial arts programs.

TABLE 93

Greatest Weaknesses of the Industrial Arts Program, Reported by Industrial Arts Chairpersons

In your opinion, what do you think is the greatest...weakness of the industrial arts program in your school?

GREATEST WEAKNESS	RANDOM SAMPLE		AIASA SAMPLE		EXEMP SAMPLE	
	COUNT	% CASES	COUNT	% CASES	COUNT	% CASES
Course content	45	7.2	21	6.7	7	4.5
Facilities	218	35.0	111	35.5	29	18.8
Enrollment	101	16.2	35	11.2	17	11.0
Administrative support	77	12.4	35	11.2	13	8.4
Staffing	104	16.7	52	16.6	16	10.4
Methodology	63	10.1	39	12.5	13	8.4
Resources	125	20.1	67	21.4	12	7.8
Funding	271	43.6	129	41.2	69	44.8
Other	40	6.4	24	7.7	16	10.4
N OF CASES valid	622		313		154	
missing	97		40		37	

Funding was the area most often cited as a major weakness by chairpersons in all three samples (43.6% in the random sample, 41.2% in the AIASA sample, and 44.8% in the exemplary sample). Thirty-five percent of the random sample and 35.5% of the AIASA sample chairpersons felt that their facility was one of the greatest weaknesses. The element least frequently selected by the three groups was course content. This result is consistent with the previously reported high frequency of selection of course content as an area of greatest strength in industrial arts programs. A greater percentage of chairpersons in all three samples felt enrollments were a strength rather than a weakness.

9.3 LOCAL AND STATE-WIDE EVALUATION IN INDUSTRIAL ARTS EDUCATION

Industrial arts chairpersons and guidance coordinators were asked several questions pertaining to minimum competency testing of student performance and evaluation systems used at the local level. This section reports the status of both state-wide and local evaluation practices.

9.3.1 Elements of an Evaluation System, as Proposed by Chairpersons

Table 94 shows over 89% of the industrial arts chairpersons in all three samples thought course content and facilities should be elements in an evaluation system for an industrial arts department. All of the remaining elements were selected by over half of the chairpersons in all three samples.

9.3.2 Minimum Competency Testing and Industrial Arts

In the late 1970's, minimum competency testing was being used by some individual schools and by some states as a part of the requirements for graduation from high school. To the extent that the information presented in industrial arts courses is considered as part of general education, industrial arts questions should be included on minimum competency tests. However, less than 12% of the guidance coordinators in all three samples reported that industrial arts items were included on either local or state minimum competency tests. See Table 95 and Table 96 for the coordinator's responses. The smallness of these percentages is largely caused by the fact that minimum competency tests were not used in a majority of the schools or states. Approximately

TABLE 94

Opinions of Chairpersons on Elements in IA Evaluation System

In your opinion, what elements do you think should be included in an evaluation system for an industrial arts department? (Mark as many as apply)

ELEMENTS	RANDOM SAMPLE		AIASA SAMPLE		EXEMP SAMPLE	
	COUNT	% CASES	COUNT	% CASES	COUNT	% CASES
Course content	587	91.0	307	93.0	164	95.9
Facilities	581	90.1	306	92.7	153	89.5
Enrollment	330	51.2	204	61.8	111	64.9
Admn. support	415	64.3	240	72.7	131	76.6
Staffing	448	69.5	242	73.3	128	74.9
Methodology	364	56.4	207	62.7	120	70.2
Resources	374	58.0	219	66.4	110	64.3
Funding	500	77.5	275	83.3	135	78.9
N OF CASES valid	645		330		171	
missing	74		23		20	

one-fourth of the guidance coordinators in all three samples indicated that minimum competency tests did not include items on industrial arts content.

State supervisors also were asked about state-level evaluation. According to supervisors, only three states used industrial arts items on minimum competency tests. Thirty-two supervisors (64%) reported that state-wide minimum competency tests were not used in their states or territories. When asked whether industrial arts items should be included on state or territory minimum competency tests, thirty-five (70%) supervisors said "yes," while nine (18%) said "no."

TABLE 95

Assessment of Minimum Competency Testing in Schools, Reported by Guidance Coordinators

Are industrial art items included on minimum competency test used in your school?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMP SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
Yes	30	4.2	4.7	29	8.2	9.4	9	4.7	5.4
No	176	24.5	27.3	73	20.7	23.5	53	27.7	31.9
MCT not used	438	60.9	68.0	208	58.9	67.1	104	54.5	62.7
missing	75	10.4	-	43	12.2	-	25	13.1	-
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

TABLE 96

Assessment of Minimum Competency Testing in States, Reported by Guidance Coordinators

Are industrial arts items included on minimum competency tests in your state?

CATEGORY	RANDOM SAMPLE			AIASA SAMPLE			EXEMP SAMPLE		
	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)	ABS FREQ	REL FREQ (%)	ADJ FREQ (%)
Yes	33	4.6	5.6	32	9.1	11.7	12	6.3	8.1
No	174	24.2	29.4	74	21.0	27.0	55	28.8	37.2
MCT not used	385	53.5	65.0	168	47.6	61.3	81	42.4	54.7
missing	127	17.7	-	79	22.4	-	43	22.5	-
TOTALS	719	100.0	100.0	353	100.0	100.0	191	100.0	100.0

9.3.3 Systematic Evaluation of Industrial Arts Programs

A total of forty-seven state supervisors responded to the question, "Does the state or territory have regular and systematic evaluations of industrial arts programs?" The majority (33 supervisors or 70.2%) reported that regular and systematic evaluations of industrial arts programs were conducted in their states.

Chapter 10
SUMMARY AND IMPLICATIONS

10.1 INTRODUCTION

The data presented in this report were obtained through surveys conducted by the Standards for Industrial Arts Education Programs Project during the Spring of 1979. The groups surveyed were fifty-four state and territorial supervisors of industrial arts and 2,235 public school principals, industrial arts chairpersons, and guidance coordinators identified in three national samples. Four survey instruments were devised by the Project's Advisory Committee and staff to collect this data. All instruments received FEDAC approval prior to being administered in late April 1979.

10.2 SUMMARY

Some of the findings that were described in the previous chapters are summarized in the following sections.

10.2.1 Philosophical Views

. The purposes of industrial arts appear to have changed little in the past seventeen years. The purpose that was found to be ranked highest in this study, as it had been in the Schmitt and Pelley study in 1962-63, was "developing in students a measure of skill in the use of common tools and machines."

. Some differences were noted between the current and ideal degrees of emphasis assigned by respondents to twelve purposes of industrial arts. Helping students to make informed educational and occupational choices, which was not in the Schmitt and Pelley study, was found to be one area that respondents thought should be emphasized a great deal more.

. Those purposes of industrial arts education most obviously associated with a general education approach (consumer education and understanding the relationship between technology and culture) were currently being emphasized the least.

. Industrial arts was generally viewed either as allied with general education or as preparation for vocational-technical education. Few respondents viewed industrial arts as being allied with college preparatory education or with vocational-technical education.

. The majority (68%-78%) of principals surveyed felt industrial arts should not be required for all students in their schools.

. Virtually all the guidance coordinators surveyed indicated they believed college-bound students should take industrial arts courses.

. In the industrial arts chairpersons' view most students with special needs should be accommodated in industrial arts, but severely handicapped students such as those students who are deaf and blind should not be accommodated.

. Of the three groups sampled, industrial arts chairpersons gave a stronger positive response to including industrial arts in elementary schools. However, differences between samples and among the three types of respondents were not large.

10.2.2 Instructional Program

. In the opinion of supervisors of industrial arts, the major characteristics of exemplary industrial arts programs are (1) having a dedicated and prepared teacher, (2) having a well-equipped laboratory, (3) using a variety of effective teaching methods, (4) having a well-rounded curriculum, (5) relevance to industry, (6) being occupationally oriented, and (7) having a student organization.

. At the state or territorial level, the most frequently listed new industrial arts course planned for implementation by 1981 was power and energy. Twenty-six state and territorial supervisors indicated no courses were being deleted by 1981. Only a few supervisors indicated specific courses were likely to be deleted.

. Industrial arts chairpersons most frequently listed plastics and graphic arts as new courses they planned to offer in their schools in the next five years (by 1984).

. In 1978-79 approximately 79% of the public secondary schools (in forty-one states) offered industrial arts courses.

. The major curriculum guides being planned for development, according to state and territorial supervisors, were in the areas of state guides for grades K-12, transportation/power/energy, communications technology, drafting, and graphic arts.

. The top five courses cited as most broadly representing industrial arts courses being taught in 1978-79 in the schools sampled were general woodworking, general metals, general industrial arts, architectural drafting, and mechanical drawing.

. The majority of principals (66.7% to 82.4%) in the public schools sampled reported that industrial arts was not a required course. In those schools where industrial arts was required, the seventh and eighth grades were the most frequent grades in which it was required. Over 90% of the high school principals did not think industrial arts should be required for all students, but from 26.5% to 60.3% of the junior high school principals thought it should be required.

. Over two-thirds of the guidance coordinators surveyed reported industrial arts teachers were providing their students with a moderate amount to "very much" career information. Over one-half of the guidance coordinators thought industrial arts teachers should be providing more career information and almost all of the remainder thought a moderate amount should be provided.

. Relating industrial arts to other school subjects, having improved laboratory facilities, and making courses meaningful to females were three of the most frequently recommended methods that guidance coordinators selected as ways to make industrial arts more accessible to students. To make industrial arts courses more appealing to students, guidance coordinators most often recommended that increased emphases be placed on the project approach to teaching and on the role of technology in society.

. The majority of industrial arts chairpersons reported that industrial arts teachers do not participate in the preparation of IEP's for handicapped students in their classes.

10.2.3 Students

. State and territorial supervisors were unable to supply much of the data requested concerning student enrollment in federally and non-federally funded industrial arts programs.

. The highest percentages of the total student population enrolled in industrial arts in the schools surveyed were found in the seventh and eighth grades. In the random sample schools almost one-half of the students were enrolled in industial arts at these grade levels.

. The highest percentages of females enrolled in industrial arts were found in more non-traditional courses such as plastics technology, fluid power, manufacturing, transportation, and research and development.

. Over 90% of the guidance coordinators in the schools surveyed thought the potential of industrial arts for breaking down stereotyped roles for females was "moderate" to "very much."

. Open enrollment and encouraging guidance counselors to advise females to take industrial arts were the initiatives most often taken by principals to encourage female enrollment in industrial arts. Over two-thirds of the principals thought females were moderately to highly encouraged to enroll in industrial arts.

. The percentage of students with special needs in industrial arts courses was typically in the range of 2% to 4% in the courses most frequently cited.

. Only five state supervisors reported data concerning the number of students with handicapping conditions enrolled in federally funded courses. Others indicated that the information was not available.

. One-half to two-thirds of the guidance coordinators and industrial arts chairpersons in each of the three samples indicated the academic abilities of students taking industrial arts courses were the same as those of the general student population. Approximately one-third of the respondents perceived the academic abilities of industrial arts students as tending to be below those of the general student population. Less than 9% of the respondents viewed the abilities of industrial arts students as being above those of the general population.

10.2.4 Student Organizations

. At the time the data were collected (Spring, 1979) there were 937 industrial arts student organizations in forty-nine states and territories.

. While only 14.0% of the industrial arts chairpersons in the random sample schools indicated they had student organizations, 33.1% of the chairpersons in the exemplary schools so indicated.

. In the five year period from 1974 to 1979, there was approximately a 50% growth in the number of schools with industrial arts clubs.

. Where there was an industrial arts student organization, between 10% (random sample) and 15% (AIASA sample) of the industrial arts students were members. The average number of members per organization ranged from 33.6 students in the random sample to 51.3 students in the exemplary sample.

. Eighteen state and territorial industrial arts supervisors reported having a staff person assigned to supervise industrial arts student organizations. On the average, the assignment involved approximately one-third of a staff member's time.

. Twenty-eight state and territorial supervisors reported their states offered no financial support for student organizations. Eleven states/territories provided travel expenses, four provided extended employment for teachers, four provided teacher salary supplements.

. Membership dues and fund-raising activities constituted the most frequently mentioned method of generating monies for student organization operations.

. College-level courses and state or local in-service training were the major sources of teacher preparation for organizing and operating student organizations. However, nearly one-half of of the chairpersons in the random sample and over one-third of the chairpersons in the AIASA and exemplary sample schools that had student organizations indicated they had received no training at all to serve as a student organization advisor.

. Principals and guidance coordinators apparently lacked positive information about AIASA. Nearly three-fourths of the principals and guidance coordinators in the random sample schools had either never heard of AIASA or had no opinion of it. However, in the AIASA sample only 37% of principals and 33% of guidance coordinators felt that AIASA was "of much worth." Another 31% of the principals and 21.6% of the guidance coordinators felt AIASA was "of some worth."

10.2.5 Teachers

. In 1977-78, there were at least 55,973 industrial arts teachers employed in 43 states. One percent of these teachers were female.

. In 1976-77, there were at least 812 unfilled teaching positions in industrial arts. In 1977-78, the number of reported vacancies increased to 838. In 1978-79, state and territorial supervisors reported 1,077 vacancies in industrial arts.

. From state supervisors' data, the percentage of fully-certified industrial arts teachers was found to have decreased slightly during the 1975-78 period from 98.3% in 1975-76, to 98.2% in 1976-77, and to 97.8% in 1977-78. The percentage of teachers who held active endorsements in industrial arts in the schools surveyed in 1978-79 was between 92.7% and 93.7%.

. The percentage of non-certified industrial arts teachers increased slightly during the 1975-78 period from 0.79% in 1975-76 to 0.89% in 1976-77, and to 1.1% in 1977-78. The percentage of teachers who held emergency or temporary endorsement in industrial arts in the schools surveyed ranged from 3.1% to 3.4%, with another 2.5% to 3.9% who held no endorsement in industrial arts.

. The average number of teachers holding full certification per school in the exemplary sample was 4.2, while the average numbers of teachers in the AIASA and random samples were 2.4 and 2.8, respectively.

. In 1978-79, from 96.3% to 99.6% of the industrial arts teachers in the schools surveyed held at least a bachelor's degree. In that year, 44.3% to 52.3% of the teachers in the schools surveyed held advanced degrees, 2.2% to 3.4% held educational specialist certificates, and several teachers held doctorates (0.6% or less). The exemplary sample teachers held more master's degrees and more educational specialist certificates than the teachers in the other two samples.

. The exemplary sample had the highest percentage (6.5%) of industrial arts teachers in their total school faculties. The random sample schools had 5.4% of the total school faculties who were industrial arts teachers. The AIASA sample had the lowest percentage (4%) of industrial arts teachers out of the total school faculty.

. A greater percentage of teachers in the AIASA sample were on ten to ten and one-half and eleven to eleven and one-half month contracts (42.3% and 16.3%, respectively) than teachers from the random and exemplary samples. A smaller percentage of the exemplary (1.5%) than AIASA (4.2%) and random (4.7%) sample teachers held twelve-month contacts.

. Approximately 48% of principals from AIASA sample schools believed that industrial arts teachers should be given extended contracts. More (approximately 66%) of the principals in the other two samples thought industrial arts teachers should have the same length contract as other teachers.

. In all three samples, a majority of teachers were members of local, state, and national education associations. A higher percentage of teachers in the AIASA and exemplary samples were members of local, state, and national industrial arts associations. Higher percentages of random sample teachers were members of teachers' unions.

10.2.6 Facilities

. The four most common general laboratories in industrial arts programs, as reported by chairpersons in all three samples, were general woods, drafting, general industrial arts, and metals. Each of these areas were cited by more than one-half of the schools.

. Five general labatory courses were cited more often in exemplary programs than in the other samples. These were graphic arts, electricity/electronics, plastics, power/automotive mechanics, and research and development. Manufacturing, construction, and home mechanics laboratories were found less often in the random sample schools.

. More than fifty kinds of unit laboratories were listed by industrial arts chairpersons in the sample schools.

. Fifteen supervisors cited plans for construction of industrial arts laboratories by 1984. A total of 238 general labs and 284 unit laboratories were listed as were planned. Graphic arts, metals, plastics, and woods being the four unit laboratories most often cited for new construction plans.

. Approximately three-fourths of the chairpersons surveyed indicated that no special modifications had been made in laboratory design or equipment to accomodate handicapped students.

10.2.7 Finance

. Twenty-eight states and territories received federal funds for industrial arts programs in 1978-79. Twenty supervisors reported that no industrial arts courses that met the criteria were receiving federal funds.

. According to industrial arts chairpersons, special funds were provided on a limited basis for some categories of students with special needs who were enrolled in industrial arts courses. Students classified as "disadvantaged," "specific learning disabled," and "mentally retarded" were most often listed as the special-needs students for whom schools were receiving special funds.

. The majority of industrial arts teachers who received supplemental pay for activities were receiving pay for coaching athletics or working with athletic contests. However, one-third to one-half of the industrial arts teachers received no supplemental pay for activities.

. The highest average amount spent per industrial arts program annually for equipment ($4,204) and supplies ($6,652) was found to be in schools in the exemplary sample. The average amount spent for equipment ($1,806) and supplies ($2,505) in the AIASA sample schools was considerably lower than the average amounts reported by the random and exemplary samples.

10.2.8 Evaluation

. At least 45% of the industrial arts chairpersons in the random, AIASA, and exemplary samples perceived course content to be the greatest strength of their programs.

. Funding was seen as the greatest weakness of industrial arts programs by at least 41% of the chairpersons in all three samples.

. Approximately 90% of the industrial arts chairpersons from the three samples agreed that course content and facilities should be included in an evaluation system for industrial arts. A majority of the chairpersons also indicated that funding, resources, methodology, staffing, administrative support, and enrollments should be included.

. Less than 10% of the schools surveyed indicated industrial arts items were on minimum competency tests at the local level. Approximately two-third of the schools sampled did not use minimum competency tests in their schools.

. Thirty-two state/territory supervisors reported minimum competency tests were not used in their states/territories. The majority of guidance coordinators in the sample schools indicated minimum competency testing was not used in their states.

. Thirty-three states conducted regular and systematic evaluations of industrial arts programs.

. Thirty-five state and territorial industrial arts supervisors thought industrial arts items should be included on state minimum competency tests.

10.3 CONCLUSIONS

The primary purpose of this study was to establish a data base on industrial arts programs in the United States. This was accomplished by surveying the industrial arts chairpersons, principals, and guidance coordinators in 2,235 public schools. Also, data was obtained from state and territorial supervisors of industrial arts regarding their programs. The following conclusions were made from the data collected in this project.

. In some ways, such as in courses offerings, industrial arts programs in public schools have not changed appreciably since 1962-63. In other ways, such as in efforts to enroll females, important changes have occured.

. The exemplary schools that were nominated by state and territorial supervisors provided a valuable basis for developing future standards.

. There is a major shortage of industrial arts teachers in the United States. The number of vacancies and the number of states with vacancies increased over 20% from 1976 to 1979.

. Industrial arts is still a predominantly male-oriented program in the public schools, but larger percentages of female students are enrolling in industrial arts (particularly in non-traditional courses) than were enrolled in the early 1960's.

. The major purpose of industrial arts, as reported by industrial arts chairpersons, principals, and guidance coordinators, is (as it was in 1962-63) to develop skills in the use of common tools and machines.

. Industrial arts remains most closely allied with general education and preparation for vocational-technical education.

. The majority of industrial arts laboratories in the schools surveyed were not equipped to accommodate handicapped students.

10.4 RECOMMENDATIONS

The following recommendations are made based on the data gathered in this report.

. If industrial arts is most nearly allied with general education, greater emphasis should be placed on educating administrators, principals, and guidance counselors to the desirability of having industrial arts as a required course for all students at some time during grades 6-12.

. Local, state, and national leadership personnel should work to set standards and unify the profession with regard to the curriculum, instruction, and evaluation needed for quality industrial arts programs..

. The industrial arts profession needs more well-qualified teachers. Also, more women and minority industrial arts teachers are needed.

. In attracting females to industrial arts courses, the most viable methods appear to be offering a greater variety of (non-traditional) courses to attract females and making an effort to attract females into traditional industrial arts courses.

. Provision should be made for making industrial arts experiences available to students with special needs.

. Greater emphasis should be placed on educating parents, teachers, and counselors to the value of industrial arts for special-needs students. Industrial arts teachers should participate in the preparation of the IEP for special-needs students.

. The profession should strengthen its standards for teacher education.

. Care should be taken to emphasize the project approach to industrial arts and to tie the industrial arts curriculum in with other school programs.

. Greater emphasis should be placed on preparing future industrial arts teachers to organize and supervise student organizations. Teachers who have not had such training should have in-service programs available to them.

. Schools should consider providing supplies to students who would benefit from industrial arts courses but cannot afford the necessary supplies.

. Greater emphasis should be placed on providing enough funding to support exemplary industrial arts programs.

. An effort should be made to provide more supervision of industrial arts programs at the state and local levels.

. National studies of industrial arts programs should be initiated on a more regular basis in the future. Since the previous study was completed in 1962-63 by Schmitt and Pelley, too much time elapsed before another study was initiated in industrial arts education.

. Each state or territory should establish a demographic data collection system for industrial arts education that can be used to regularly (annually or bi-annually) collect, tabulate, and synthesize these data.

. The industrial arts profession should consider developing a set of valid and reliable test items to be included in local and state minimum competency testing programs.

. All industrial arts departments should conduct regular and systematic evaluation of their programs.

. The industrial arts teacher shortage appears to be a major problem in the United States. It is recommended that steps be taken by the teaching profession or other interested groups to alleviate this growing problem.

. The supply of fully-certified industrial arts teachers should be increased significantly during the next few years to offset critical shortages of industrial arts teachers throughout the country.

. Industrial arts teachers should be given extended contracts in order to provide competitive salaries that would attract more teachers.

Appendix A

QUESTIONS FROM SURVEYS OF SECONDARY SCHOOLS AND STATE/TERRITORIAL SUPERVISORS

PRINCIPAL'S SURVEY

---

1. Please indicate the total enrollment by grade level and by sex in your school as of October 1, 1978.

2. Please indicate the projected total enrollment trends in your school for the next three years.

3. Does your school system have a local industrial arts supervisor (other than the principal)?

4. Please indicate the number of full time equivalent (F.T.E.) professional faculty employed in your school. (round off fractions to the lower number)

5. Does your school offer any industrial arts courses? If no, does your school have industrial arts facilities (classes) available and/or planned?

6. Please indicate the projected enrollment trends in industrial arts in your school for the next three years.

7. Please indicate if the industrial arts department in your school receives special funds for the following (special needs) students who are enrolled in industrial arts courses. (please mark yes or no in each category below)

8. How many of your industrial arts teachers have the following types of teaching contracts? (mark as many as apply)

9. In your opinion, what length of contract should the industrial arts teacher be given? (mark one)

10. For which of the following activities do the industrial arts teachers in your school receive supplemental pay? (mark as many as are appropriate)

11. In your school are any industrial arts courses required? If yes, indicate grade level(s). (mark as many as are appropriate)

12. Have inservice courses been offered that would help industrial arts teachers work more effectively with the following categories of students? (Mark yes or no in each category below.)

13. In your school to what extent are females actively encouraged to enroll in industrial arts courses? (mark one)

14. Which of the following initiatives have been taken in your school to encourage females to enroll in the industrial arts courses? (mark as many as apply)

15. How many industrial arts teachers do you have in your school?

16. Indicate the number of classes (including lab) per week that the majority of the industrial arts courses meet in your school.

17. Indicate the number of minutes per class that the majority of the industrial arts courses meet in your school.

18. Please indicate any industrial arts courses taught in your school that receive federal and state funds. (See list and mark as many as apply.)

19. Please indicate the total number of students enrolled in industrial arts courses in your school by grade level as of October 1, 1978.

20. The American Industrial Arts Student Association (AIASA) is the recognized industrial arts student organization. How worthwhile do you perceive the AIASA organization? (mark one)

21. Does the administration encourage student participation in industrial arts club activities?

22. How does the administration perceive industrial arts clubs operating in your school?

23. In your opinion, industrial arts is most closely allied with which of the following programs?

24. In your opinion, should industrial arts be required for all students in your school?

25. In your opinion, should industrial arts be an integral part of elementary school programs?

26. Please indicate the relative degree of emphasis you attach to each of the potential purposes of industrial arts by darkening one circle in the column marked "current" and one circle in the column marked "ideal" for each purpose statement.

GUIDANCE COORDINATOR'S SURVEY

---

1. In your opinion, industrial arts is most closely allied with which one of the following programs? (mark one)

2. In your school, for which of the following types of special need students have special provisions been made in your industrial arts courses over the past five years? (mark as many as apply.)

3. Please indicate the relative degree of emphasis you attach to each of the potential purposes of industrial arts by darkening one circle in the column marked "current" and one circle in the column marked "ideal" for each purpose statement.

4. To what extent are the industrial arts teachers in your school consulted regarding the placement of students in industrial arts courses? (mark one)

5. The majority of students in your school who take industrial arts courses are in which program? (mark one)

6. In your opinion, should college-bound students take industrial arts courses?

7. How would you rate the academic abilities of those students in your school who take industrial arts courses in comparison to the general school population? (mark one)

8. How can the industrial arts courses in your school be made accessible to more students? (mark as many as apply.)

9. How can the industrial arts courses in your school be made more appealing to the students?

10. To what extent are industrial arts teachers providing career information in their classes? (mark one)

11. In your opinion, how much career information should industrial arts teachers provide in their classes?

12. Do guidance counselors in your school provide career information for students interested in pursuing industrial arts teaching as a career?

13. To what extent do the industrial arts teachers in your school assist guidance coordinators in understanding the industrial arts program? (mark one)

14. How great a potential do you believe industrial arts has for breaking down stereotyping roles for females?

15. To what degree do guidance counselors in your school encourage females to enroll in industrial arts courses?

16. Are industrial arts items included on minimum competency tests used in your school/state?

17. In your opinion, should industrial arts items be included on minimum competency tests?

18. The American Industrial Arts Student Association (AIASA) is the recognized industrial arts student organization. How worthwhile do you perceive this organization? (mark one)

INDUSTRIAL ARTS CHAIRPERSON'S SURVEY

---

1. In your opinion, industrial arts is most nearly allied with which one of the following programs? (mark one)

2. Please indicate which of the following represent major barriers to having an outstanding industrial arts program. (mark as many as apply)

3. Which of the following special need students should industrial arts accommodate? (mark as many as apply)

4. Please indicate the relative degree of emphasis you attach to each of the potential purposes of industrial arts by darkening one circle in the column marked "current" and one circle in the column marked "ideal" for each purpose statement.

5. Please provide information for each of the industrial arts courses taught in your school in the spaces provided on this page and the next three pages. List the (up to 9) courses which <u>most</u> broadly represent course offerings at your school.

6. What additional industrial arts courses do you believe will be offered in your school five years from now? Use the course number codes listed in (the previous question).

7. Which of the following facilities (unit, general lab) are available in your school? (mark as many as apply)

8. How many industrial arts laboratories (drafting rooms/labs) are there in your school?

9. Please indicate which of the following activities have been undertaken by the industrial arts faculty during the past five years. (mark as many as apply)

10. Do industrial arts teachers participate in preparation of the individualized educational program (IEP) for handicapped students?

11. In your opinion, what do you think is the greatest strength and weakness of the industrial arts program in your school? (Mark only one item in strength column and one in weakness column.)

12. In your opinion, how would you rate the academic abilities of those students who take industrial arts courses in comparison to the general school population?

13. To what extent do you believe industrial arts helps students make informed educational and occupational choices?

14. In your opinion, what elements do you think should be included in an evaluation system for an industrial arts department?

15. Is industrial arts offered in elementary schools in your district? If yes, is industrial arts required?

16. In your opinion, should industrial arts be offered in elementary schools in your district?

17. Indicate below the average amount spent annually for equipment in your industrial arts department. (Mark in the dollar amount starting with the last digit in the far right hand column.)

18. Indicate below the average amount spent for supplies annually in your industrial arts department. (Mark in the dollar amount starting with the last digit in the far right hand column.)

19. What procedures do you most often use in providing students with expendable supplies? (mark one)

20. In your opinion, what procedures do you think should be used in providing students with expendable supplies in your industrial arts program?

21. For each of the following special needs students, indicate the number enrolled in industrial arts classes.

22. Have recruitment techniques been expanded in the past five years to enroll female students in your industrial arts program?

23. Indicate the number of students who take industrial arts courses according to each of the following racial or ethnic categories. All students must be accounted for.

24. What special efforts have been taken in the designing and equipping of your laboratory to accommodate the handicapped student?

25. You are currently a member of which of the following professional educational organizations?

26. In your opinion, how do industrial arts teachers in your school compare in terms of professional involvement with respect to other teachers in the school (e.g. serve on committees, run for professional offices, etc.)

27. How many <u>total years of teaching experience</u> does each of your industrial arts teachers have (including all of the schools in which they have taught)?

28. How many of the industrial arts teachers in your department hold the following type of state teaching certificate? (a. active teacher certification or license for industrial arts; b. emergency or provisional certification or license in industrial arts; c. active teacher certification but not endorsed in industrial arts)

29. Is there an industrial arts advisory committee in your school system? If yes, indicate the number of members by sex.

30. Below, mark the highest educational degree that each of the industrial arts teachers in your department has earned. (mark one degree for each teacher)

31. Do you have an industrial arts student club in your school? If yes, is it AIASA affiliated?

32. In your opinion, which of the following categories best describe the relationships between the industrial arts club activities and the industrial arts program? (mark one)

33. What have been the enrollments, as of January 1, of each year, in your school's industrial arts club for the past five years? (mark in the years that apply)

34. For how many years has your school's industrial arts club been in existence?

35. Indicate the types of dissemination activities that are used by your industrial arts club. (mark as many as apply)

36. Identify the types of materials, resources or references that assist your student club in implementing club objectives. (mark as many as apply)

37. Indicate the club activities in which members are involved.

38. Indicate the ways in which the industrial arts club is funded in your school.

39. How many hours per month does the faculty advisor devote to the industrial arts club? (indicate an average monthly figure)

40. Indicate the types of preparation you received to serve as a student club advisor. (mark as many as apply)

STATE AND TERRITORIAL SUPERVISOR'S SURVEY

1. How many industrial arts positions were vacant (not filled by anyone) in your state or territory (at the beginning of each school year) for the past three years?

2. Please indicate the actual number of fully certified, emergency or temporary certified, and non-certified male and female industrial arts teachers employed in your state or territory for the past three years.

3. Indicate by sex how many persons earned bachelor degrees with teaching certification in industrial arts in your state or territory during the past three years.

4. In your opinion, should inservice industrial arts training be required of all: (1) first year industrial arts teachers? (2) teachers with provisional certification in industrial arts? (3) teachers with other certification? (4) teachers without certification?

5. Please indicate the total number of male and female students enrolled in industrial arts in each of the grade levels in your state or territory for the past three years. Are these figures estimate or actual?

6. Please indicate the 1977-78 total enrollments in federally funded (either full or partially) and non-federally supported industrial arts courses for each of the following grade levels in your state or territory.

7. Please list below the course titles and grade levels of federally funded industrial arts courses in your state or territory.

8. Please list (by title) all industrial arts courses that are planned to be deleted in your state or territory within the next three years (1979-81).

9. List (by title) all new industrial arts courses that are planned for implementation by your state or territorial agency within the next three years (1979-81).

10. How many secondary schools are there in your state or territory?

11. How many secondary schools offer industrial arts courses in your state or territory?

12. How many schools in your state or territory are receiving federal funds for industrial arts?

13. How many elementary and middle schools are there in your state or territory?

14. How many elementary and middle schools offer industrial arts courses in your state or territory?

15. Are all courses in industrial arts, which meet the criteria for federal funding, receiving funds?

16. Should all industrial arts courses in public schools, regardless of philosophical orientation, be federally funded?

17. Please estimate the number of students with the following handicapping conditions served by industrial arts courses approved for federal funding. (Each student should be reported only once.)

18. Has your state or territory developed a master plan for the scope and sequence of industrial arts courses? If yes, does this plan or any other existing plan identify and/or include student club activities? If no, are there plans to develop (a master plan) in the next three years (1979-81)?

19. List the state or territory curriculum guides in industrial arts planned for development within the next three years. (1979-81)

20. Do provisions in the state or territory plan for vocational education cover industrial arts courses? If no, are there

plans for inclusion of industrial arts in the state or territory plan for vocational education within the next three years? (1979-81)

21. Please indicate the type and number of industrial arts laboratories planned for construction during the next five years in your state or territory. (1979-84)

22. Does the state or territorial industrial arts supervisory staff approve new industrial arts facility plans and major renovations?

23. How many full time equivalent (F.T.E.) supervisory personnel for industrial arts programs are employed at the state or territory level? (use decimal equivalent for fraction)

24. How many full time equivalent (F.T.E.) supervisory personnel for industrial arts programs should be employed in your state or territory level?

25. Is there a state or territorial staff member assigned to supervise industrial arts student organizations? If yes, what percentage of time? If no, are there plans to make such an assignment within the next two years (1979-81)?

26. How does the state or territory provide funding for student clubs? (mark as many as apply)

27. Please indicate the number of industrial arts clubs in your state or territory.

28. Have any AIASA in-service workshops been conducted in your state or territory for teachers during the past three years? (1977-79) If yes, what is the total number of teachers who participated? If no, are there any plans within the next three years (1979-81)?

29. Do you have an advisory committee to assist in the promotion and establishment of industrial arts student clubs in your state or territory?

30. In your opinion, what are the major incentives for the promotion and establishment of industrial arts student clubs in your state or territory?

31. In your opinion, what are the constraints or roadblocks to promoting the establishment of industrial arts clubs in your state or territory?

32. What do you think should be the maximum student/teacher ratio for industrial arts laboratory courses?

33. Are industrial arts items included on minimum competency tests used in your state or territory?

34. In your opinion, should industrial arts items be included on minimum competency tests?

35. Does the state or territory have regular and systematic evaluations of industrial arts programs?

36. In your opinion, what are the major characteristics of an exemplary program in industrial arts?

37. In your opinion, what should be the basic elements of standards for industrial arts in secondary schools in the United States.

Appendix B

PURPOSES OF INDUSTRIAL ARTS AND DEGREE OF EMPHASIS

TABLE 97

Current and Ideal Degree of Emphasis Attached to the Purpose of Industrial Arts

Please indicate the relative degree of emphasis you attach to each of the potential purposes of industrial arts ....

SAMPLES AND RESPONDENTS	PURPOSES OF INDUSTRIAL ARTS AND DEGREE OF EMPHASIS											
	To develop an understanding of our technical culture.						To discover and to develop creative technical talents in students.					
	MEAN DEGREE OF EMPHASIS											
	CURRENT			IDEAL			CURRENT			IDEAL		
	MEAN	SD	RANK	MEAN	SD	RANK	MEAN	SD	RANK	MEAN	SD	RANK
RANDOM												
Chairperson	2.1	.63	6	2.6	.52	7	2.2	.65	3	2.7	.49	3
Coordinator	2.0	.60	9	2.5	.56	7	2.1	.63	3	2.7	.49	3
Principal	2.0	.58	9	2.4	.52	8	2.2	.63	3	2.6	.55	3
AIASA												
Chairperson	2.2	.60	6	2.7	.44	4	2.3	.62	3	2.7	.45	5
Coordinator	2.1	.58	8	2.6	.54	8	2.2	.66	2	2.7	.49	2
Principal	2.1	.57	7	2.5	.55	5	2.3	.66	2	2.7	.50	2
EXEMPLARY												
Chairperson	2.2	.61	7	2.7	.49	4	2.3	.59	3	2.7	.52	5
Coordinator	2.1	.65	8	2.6	.53	7	2.3	.69	3	2.8	.48	2
Principal	2.1	.53	7	2.5	.56	7	2.3	.59	3	2.7	.51	2

Table 97 continued

SAMPLES AND RESPONDENTS	PURPOSES OF INDUSTRIAL ARTS AND DEGREE OF EMPHASIS											
	To develop an understanding of the application of science and math.						To develop in each student a measure of skill in the use of common tools and machines.					
	MEAN DEGREE OF EMPHASIS											
	CURRENT			IDEAL			CURRENT			IDEAL		
	MEAN	SD	RANK	MEAN	SD	RANK	MEAN	SD	RANK	MEAN	SD	RANK
RANDOM												
Chairperson	1.8	.64	12	2.4	.57	11	2.7	.52	1	2.8	.42	1
Coordinator	1.8	.63	10	2.4	.59	10	2.7	.51	1	2.8	.42	1
Principal	1.8	.63	12	2.3	.60	11	2.6	.54	1	2.8	.44	1
AIASA												
Chairperson	1.9	.64	11	2.5	.54	9	2.7	.54	1	2.8	.41	1
Coordinator	1.9	.64	11	2.5	.59	9	2.7	.58	1	2.8	.39	1
Principal	1.8	.65	12	2.4	.58	11	2.5	.59	1	2.8	.44	1
EXEMPLARY												
Chairperson	1.8	.59	12	2.4	.56	10	2.7	.54	1	2.8	.40	1
Coordinator	1.9	.63	12	2.5	.56	10	2.8	.47	1	2.9	.37	1
Principal	1.8	.62	12	2.2	.59	12	2.6	.57	1	2.7	.48	1

Table 97 continued

SAMPLES AND RESPONDENTS	PURPOSES OF INDUSTRIAL ARTS AND DEGREE OF EMPHASIS											
	To provide prevocational experience of an intensified nature for those students interested in technical work.						To provide vocational training for students who would not otherwise have this opportunity.					
	MEAN DEGREE OF EMPHASIS											
	CURRENT			IDEAL			CURRENT			IDEAL		
	MEAN	SD	RANK	MEAN	SD	RANK	MEAN	SD	RANK	MEAN	SD	RANK
RANDOM												
Chairperson	2.0	.72	9	2.4	.66	9	1.8	.75	10	2.2	.75	8
Coordinator	2.1	.71	4	2.6	.58	4	2.0	.75	7	2.4	.68	8
Principal	2.1	.68	6	2.5	.65	6	2.0	.70	8	2.4	.70	10
AIASA												
Chairperson	2.2	.71	8	2.7	.54	7	1.9	.75	12	2.3	.78	12
Coordinator	2.2	.72	5	2.8	.54	4	2.2	.69	4	2.6	.60	5
Principal	2.1	.70	7	2.5	.63	7	2.2	.72	6	2.4	.69	10
EXEMPLARY												
Chairperson	2.1	.69	9	2.5	.63	8	1.9	.71	11	2.2	.73	12
Coordinator	2.2	.74	5	2.6	.55	5	2.2	.75	4	2.5	.66	8
Principal	2.2	.70	6	2.5	.58	4	2.1	.71	9	2.3	.73	10

Table 97 continued

SAMPLES AND RESPONDENTS	PURPOSES OF INDUSTRIAL ARTS AND DEGREE OF EMPHASIS											
	To provide general all-around technical knowledge and skills.						To develop worthy leisure time interests.					
	MEAN DEGREE OF EMPHASIS											
	CURRENT			IDEAL			CURRENT			IDEAL		
	MEAN	SD	RANK	MEAN	SD	RANK	MEAN	SD	RANK	MEAN	SD	RANK
RANDOM												
Chairperson	2.4	.63	2	2.7	.52	5	2.2	.69	4	2.4	.64	10
Coordinator	2.2	.63	2	2.5	.56	6	2.1	.67	5	2.4	.60	9
Principal	2.2	.61	2	2.5	.57	5	2.1	.65	4	2.5	.60	7
AIASA												
Chairperson	2.4	.63	2	2.7	.48	6	2.2	.67	7	2.4	.66	11
Coordinator	2.2	.63	3	2.6	.51	7	2.1	.66	6	2.5	.59	10
Principal	2.2	.62	3	2.5	.56	4	2.2	.65	5	2.4	.58	8
EXEMPLARY												
Chairperson	2.4	.61	2	2.6	.54	7	2.3	.67	5	2.4	.65	11
Coordinator	2.3	.64	2	2.6	.52	4	2.2	.66	7	2.5	.59	9
Principal	2.3	.63	2	2.5	.56	5	2.2	.71	5	2.4	.63	8

Table 97 continued

SAMPLES AND RESPONDENTS	PURPOSES OF INDUSTRIAL ARTS AND DEGREE OF EMPHASIS											
	To develop consumer knowledge and appreciation and use of industrial products.						To develop problem-solving skills relating to materials and processes.					
	MEAN DEGREE OF EMPHASIS											
	CURRENT			IDEAL			CURRENT			IDEAL		
	MEAN	SD	RANK	MEAN	SD	RANK	MEAN	SD	RANK	MEAN	SD	RANK
RANDOM												
Chairperson	2.1	.68	8	2.6	.53	6	2.2	.66	5	2.7	.47	2
Coordinator	1.8	.67	11	2.4	.61	11	2.1	.65	6	2.5	.53	5
Principal	1.9	.65	10	2.4	.60	9	2.0	.62	7	2.5	.55	4
AIASA												
Chairperson	2.1	.68	10	2.6	.54	8	2.3	.68	4	2.8	.45	3
Coordinator	1.9	.63	12	2.4	.59	11	2.1	.65	7	2.6	.55	6
Principal	2.0	.66	10	2.4	.61	9	2.1	.63	9	2.5	.56	6
EXEMPLARY												
Chairperson	2.1	.66	8	2.6	.55	6	2.3	.62	4	2.8	.44	2
Coordinator	1.9	.65	11	2.4	.61	11	2.2	.60	5	2.6	.53	6
Principal	1.9	.66	10	2.4	.58	9	2.1	.64	8	2.5	.54	6

Table 97 continued

SAMPLES AND RESPONDENTS	PURPOSES OF INDUSTRIAL ARTS AND DEGREE OF EMPHASIS											
	To develop an understanding of the nature and characteristics of technology.						To help students make informed educational and occupational choices.					
	MEAN DEGREE OF EMPHASIS											
	CURRENT			IDEAL			CURRENT			IDEAL		
	MEAN	SD	RANK	MEAN	SD	RANK	MEAN	SD	RANK	MEAN	SD	RANK
RANDOM												
Chairperson	1.8	.63	11	2.4	.60	12	2.1	.68	7	2.7	.50	4
Coordinator	1.8	.65	12	2.3	.55	12	2.0	.70	8	2.7	.49	2
Principal	1.8	.63	11	2.2	.61	12	2.1	.67	5	2.6	.55	2
AIASA												
Chairperson	2.0	.67	9	2.5	.58	10	2.3	.66	5	2.8	.44	2
Coordinator	2.0	.65	10	2.4	.59	12	2.1	.70	9	2.7	.49	3
Principal	2.0	.63	11	2.4	.54	12	2.2	.65	4	2.6	.53	3
EXEMPLARY												
Chairperson	2.0	.61	10	2.5	.56	9	2.2	.68	6	2.7	.45	3
Coordinator	2.2	.59	10	2.3	.57	12	2.1	.66	9	2.8	.45	3
Principal	1.9	.62	11	2.2	.60	11	2.3	.63	4	2.7	.54	3

Appendix C

INDUSTRIAL ARTS COURSES BY GRADE LEVEL FOR THE THREE SAMPLES

TABLE 98

Representation Industrial Arts Courses Taught in Random Sample Schools, by Grade Level

COURSE NAME	6TH	7TH	8TH	9TH	10TH	11TH	12TH
Construction	1	4	8	11	10	11	18
Art metals	1	1	1	2	3	4	0
Ceramics	1	5	4	5	5	5	3
Crafts	1	2	4	8	6	3	3
Industrial crafts	0	3	2	1	2	4	0
Leather	1	11	12	10	6	3	4
Textiles	0	0	0	0	0	0	1
Jewelry and lapidary	0	0	2	0	4	1	2
Other industrial crafts	0	0	1	0	4	2	1
Architectural drafting	1	0	0	11	19	77	53
Descriptive geometry	0	0	0	0	1	0	1
Drafting	3	15	28	40	53	38	5
Drafting technology	0	2	0	3	8	9	5
Engineering drawing	0	1	1	3	7	16	9
Industrial design	0	0	0	2	1	3	0
Mechanical drawing	5	10	19	65	62	53	15
Technical illustration	0	0	0	0	2	1	1
Other drafting	0	3	0	3	1	0	3
Electricity	4	17	17	24	34	14	3
Electricity-electronics	3	0	8	6	32	26	6
Electronics	1	0	4	4	10	18	7
Other electri-electronics	0	0	0	0	0	4	0
General industrial arts	8	29	53	95	23	10	3
Graphic arts	2	12	12	16	23	35	15
Photography	2	0	0	6	7	13	9
Photolithography	0	0	0	1	2	6	4
Printing	2	1	3	3	2	5	0
Communications technology	1	1	2	4	3	1	0
Other Graphic arts	2	1	0	1	0	4	2
General home mechanics	4	1	1	0	1	3	3
Fluid power	0	0	1	0	2	1	0
Industrial materials	0	0	0	0	1	0	0
Ind materials and processes	0	0	2	6	5	1	0
Industrial processes	0	0	0	0	0	1	0
Instrumentation	0	0	0	0	0	0	0
Numerical control	0	0	0	0	0	0	0
Other ind materials and proc	0	0	0	0	0	1	1
Manufacturing	0	6	23	9	4	3	1
Production technology	0	0	1	1	0	0	0
General metals	7	20	49	56	81	44	14
Metal machining	2	0	0	1	14	29	10
Metal technology	2	1	1	2	3	8	5
Sheet metal	1	1	4	3	6	4	0
Welding	2	3	3	6	17	23	15
Foundry	1	0	4	2	1	4	3
Other metals	0	2	0	2	1	2	1
Plastics	0	9	15	8	9	6	3
Plastics technology	0	1	1	0	1	1	1
Other plastics	0	1	1	0	0	0	0
Automotive mechanics	5	0	0	4	16	44	35
Power-automotive mechanics	4	0	0	1	6	14	9
Power mechanics	5	3	11	18	27	14	6
Transportation	0	0	0	1	0	1	0
Power-transportation	1	3	1	4	2	2	1
Other power-automotive	0	1	0	5	6	4	3
Research and development	1	0	0	0	0	0	1
Service industries	0	0	0	0	0	0	0
General woods	16	46	64	105	112	63	9
Woods technology	11	3	2	13	19	27	17
Other woods	5	7	0	3	11	19	19
American industry	0	3	4	5	1	1	1
Exploring technology	0	5	1	5	0	0	1
Finishing materials/methods	0	0	0	0	1	0	1
Other Industrial arts	9	8	7	4	5	7	3

TABLE 99

Representative Industrial Arts Courses Taught in AIASA Sample Schools, by Grade Level

COURSE NAME	6TH	7TH	8TH	9TH	10TH	11TH	12TH
Construction	1	7	13	28	13	8	0
Art metals	0	1	3	1	0	0	0
Ceramics	1	0	2	1	3	4	1
Crafts	3	1	3	2	3	2	1
Industrial crafts	0	1	4	1	5	4	0
Leather	2	7	8	2	3	1	0
Textiles	0	0	0	0	0	0	0
Jewelry and lapidary	0	0	1	0	0	3	0
Other industrial crafts	1	1	0	0	0	0	0
Architectural drafting	3	0	1	2	8	31	32
Descriptive geometry	0	0	1	0	0	0	0
Drafting	1	8	15	26	20	24	3
Drafting technology	1	0	0	2	9	4	1
Engineering drawing	0	0	0	1	3	10	5
Industrial design	0	0	1	0	1	0	0
Mechanical drawing	1	5	8	20	29	31	10
Technical illustration	0	0	1	0	0	2	3
Other drafting	0	2	0	2	0	1	4
Electricity	1	5	10	13	9	4	3
Electricity-electronics	0	2	5	6	12	16	3
Electronics	0	0	0	0	2	5	4
Other electri-electronics	0	0	0	0	0	0	1
General industrial arts	8	16	36	43	16	3	0
Graphic arts	0	5	4	2	9	13	6
Photography	2	3	3	4	5	7	5
Photolithography	0	1	1	1	0	0	0
Printing	0	2	1	2	2	2	0
Communications technology	0	1	0	6	5	3	0
Other Graphic arts	1	0	0	0	0	1	1
General home mechanics	0	2	5	7	4	8	4
Fluid power	0	0	2	0	0	1	0
Industrial materials	0	0	0	0	0	0	0
Ind materials and processes	0	0	0	3	0	1	0
Industrial processes	0	0	0	0	0	0	0
Instrumentation	0	0	0	0	0	0	0
Numerical control	0	0	0	0	0	0	1
Other ind materials and proc	0	0	0	0	0	0	1
Manufacturing	0	5	25	19	12	4	2
Production technology	0	0	2	1	1	1	0
General metals	0	9	7	17	34	27	3
Metal machining	0	0	0	3	6	7	2
Metal technology	1	0	0	2	6	3	3
Sheet metal	0	1	1	2	2	1	0
Welding	2	0	1	1	5	5	2
Foundry	0	0	0	1	1	1	1
Other metals	0	0	2	0	0	0	0
Plastics	0	3	3	3	2	1	1
Plastics technology	0	1	0	0	3	1	1
Other plastics	0	0	0	0	0	0	0
Automotive mechanics	3	0	0	2	5	3	3
Power-automotive mechanics	0	0	0	1	4	2	1
Power mechanics	0	3	11	13	5	3	2
Transportation	0	0	0	3	0	0	0
Power-transportation	0	1	4	4	7	1	0
Other power-automotive	0	1	0	2	2	0	0
Research and development	0	0	0	0	0	0	0
Service industries	0	0	0	0	0	0	0
General woods	6	12	24	40	51	24	7
Woods technology	2	2	2	7	9	19	9
Other woods	1	1	2	1	2	9	6
American industry	0	6	20	2	1	0	0
Exploring technology	0	3	3	3	2	0	0
Finishing materials/methods	2	0	0	0	3	0	0
Other Industrial arts	3	5	5	8	3	2	5

TABLE 100

Representative Industrial Arts Courses Taught in Exemplary Sample Schools

COURSE NAME	6TH	7TH	8TH	9TH	10TH	11TH	12TH
Construction	2	2	6	10	3	7	6
Art metals	0	0	0	0	1	0	2
Ceramics	1	1	0	0	3	2	0
Crafts	1	0	1	3	3	0	0
Industrial crafts	0	5	0	2	0	3	0
Leather	0	1	0	0	0	1	0
Textiles	0	0	0	0	0	1	0
Jewelry and lapidary	0	0	1	0	0	0	1
Other industrial crafts	0	0	0	0	1	3	0
Architectural drafting	0	0	1	1	6	17	27
Descriptive geometry	1	1	0	0	1	3	0
Drafting	2	5	5	8	15	15	1
Drafting technology	0	0	0	1	2	5	1
Engineering drawing	0	0	0	0	1	8	5
Industrial design	0	0	0	0	0	1	0
Mechanical drawing	1	2	2	11	17	19	5
Technical illustration	0	0	0	0	0	3	1
Other drafting	0	0	0	1	1	0	1
Electricity	3	4	1	2	9	8	1
Electricity-electronics	2	0	2	2	12	19	3
Electronics	0	0	0	1	6	8	6
Other electri-electronics	0	0	0	0	0	3	1
General industrial arts	0	8	10	23	5	3	0
Graphic arts	1	3	1	7	11	19	6
Photography	0	0	1	1	5	9	5
Photolithography	0	0	0	0	1	1	0
Printing	0	0	1	0	3	0	1
Communications technology	1	1	1	6	4	4	0
Other Graphic arts	1	0	0	0	0	1	1
General home mechanics	1	0	1	0	2	3	1
Fluid power	0	0	0	0	0	0	0
Industrial materials	0	0	1	0	0	0	0
Ind materials and processes	0	0	0	2	3	5	0
Industrial processes	0	0	0	0	0	0	1
Instrumentation	0	0	0	0	0	0	0
Numerical control	0	0	0	0	0	0	0
Other ind materials and proc	0	0	0	0	1	0	1
Manufacturing	0	3	11	7	1	1	1
Production technology	0	1	0	1	0	0	0
General metals	2	3	12	8	23	23	2
Metal machining	0	0	0	1	3	6	2
Metal technology	1	0	1	1	2	1	0
Sheet metal	0	0	0	2	1	2	0
Welding	2	0	0	0	4	8	4
Foundry	0	0	0	0	0	1	0
Other metals	0	0	0	0	2	0	0
Plastics	1	1	0	1	1	3	1
Plastics technology	0	1	0	0	2	0	0
Other plastics	0	0	0	0	0	0	0
Automotive mechanics	0	0	0	0	3	10	6
Power-automotive mechanics	0	0	0	0	5	3	0
Power mechanics	0	3	2	6	10	9	0
Transportation	0	1	0	0	1	0	1
Power-transportation	0	1	1	7	2	4	0
Other power-automotive	1	0	0	2	5	0	3
Research and development	1	0	1	1	0	0	3
Service industries	0	0	0	0	0	0	0
General woods	2	7	9	15	36	20	1
Woods technology	3	1	1	5	3	9	5
Other woods	2	0	0	1	0	6	3
American industry	1	4	4	0	1	1	0
Exploring technology	0	1	3	1	0	1	0
Finishing materials/methods	0	0	0	1	0	0	0
Other Industrial arts	4	4	2	4	1	2	1

Appendix D

MALE AND FEMALE INDUSTRIAL ARTS ENROLLMENTS BY GRADE FOR 1975-78

TABLE 101

Partial Male and Female Enrollments in Industrial Arts, Reported by State Supervisors

1975-76

GRADE	MALES	NO. OF STATES	FEMALES	NO. OF STATES	TOTALS	NO. OF STATES
K-5	10,275	8	8,887	8	21,487	9
6	29,300	10	22,678	10	52,662	11
7	250,503	11	86,855	11	381,208	13
8	300,825	11	82,909	10	428,805	12
9	257,848	11	27,662	11	334,054	13
10	208,970	10	22,805	10	257,275	12
11	161,484	10	161,484	10	199,186	12
12	136,960	10	13,768	10	161,663	12
TOT	1,015,835	11	203,610	11	1,457,473	14

1976-77

GRADE	MALES	NO. OF STATES	FEMALES	NO. OF STATES	TOTALS	NO. OF STATES
K-5	11,725	10	10,377	10	25,661	11
6	36,773	11	27,864	11	64,941	12
7	256,757	12	101,950	11	407,094	13
8	306,774	12	100,757	11	466,148	13
9	378,518	13	29,349	12	460,235	14
10	212,977	12	23,697	11	268,943	13
11	168,966	12	18,214	11	214,841	13
12	143,979	12	15,994	11	172,347	13
TOT	1,199,448	11	328,568	12	1,970,877	16

1977-78

GRADE	MALES	NO. OF STATES	FEMALES	NO. OF STATES	TOTALS	NO. OF STATES
K-5	12,601	11	10,483	11	23,084	11
6	40,429	13	29,277	13	69,706	13
7	271,587	14	107,749	13	397,780	14
8	325,969	14	106,197	13	455,256	14
9	294,825	15	37,800	14	353,376	15
10	241,226	14	31,706	13	284,455	14
11	192,924	14	23,528	13	226,381	14
12	164,795	14	22,239	12	191,124	13
TOT	1,596,275	15	427,717	15	2,318,254	20

Appendix E

PERCENTAGE OF GENERAL STUDENT POPULATION ENROLLED IN INDUSTRIAL ARTS BY GRADE LEVEL AND BY SCHOOL SIZE

E.1 PERCENTAGE OF STUDENT POPULATION ENROLLED IN IA COURSES

Table 102 contains data on the percentages of the general student population who were enrolled in industrial arts in 1978-79 in the sample schools. Since these data are broken down by the size of the school and by grade, some of the percentages, particularly in the lower grades in the larger schools, are based on a small number of cases. In addition to the percentages of students, Table 102 reports the total number of students in the general population and the total number of industrial arts students which were used to generate the percentages. (Means can be generated using figures for the number of cases.)

In looking across all combinations of grade level and school size, the highest percentage enrollments across the three samples ranged from 26.3% to 75.5%, with the median highest percentage being 38.1% . The highest two percentages were found to be from random sample schools, but only three schools, which happened to have over 2,500 students, reported the data from which the calculations were made. The percentages for the AIASA sample ranged among the categories from 11.4% to 50.8%, with a median of 24.5%. The percentages for the random sample had a median of 30.6%, with a range of 18.6% to 75.5%. The median for the percentage of students enrolled in industrial arts in the exemplary sample schools was 34.1%, with percentages ranging from 9.6% to 53.6% among the categories. Overall, the AIASA schools tended to have the lowest percentages of total school population enrolled in industrial arts, and the exemplary sample schools tended to have the highest percentages.

TABLE 102

Percentage of General Student Population Enrolled in Industrial Arts by Grade Level and by School Size

GRADES AND SAMPLES	SCHOOL SIZE = 1-499				SCHOOL SIZE = 500-999			
	ENROLLMENTS		% IA TO TOT	N OF CASES	ENROLLMENTS		% IA TO TOT	N OF CASES
	TOT	IA			TOT	IA		
GRADE 6								
Random	2567	667	26.0	54	6980	2902	41.6	55
AIASA	331	94	28.4	7	4153	884	21.3	26
Exemp	208	25	12.0	7	1105	160	14.5	9
GRADE 7								
Random	7527	3545	47.1	93	24487	11799	48.2	122
AIASA	868	441	50.8	14	12656	3812	30.1	52
Exemp	731	392	53.6	14	5451	2460	45.1	24
GRADE 8								
Random	8955	3752	41.9	106	31206	15720	50.4	145
AIASA	1312	578	44.1	16	21328	7189	33.7	78
Exemp	1296	695	53.6	17	6835	3328	48.7	30
GRADE 9								
Random	9132	3303	36.2	135	29162	11117	38.1	149
AIASA	2100	936	44.6	25	12098	3744	30.9	60
Exemp	1700	833	49.0	24	6809	2243	32.9	33
GRADE 10								
Random	7611	2466	32.4	121	13829	4722	34.1	98
AIASA	1170	375	32.1	19	7461	1829	24.5	47
Exemp	1440	559	47.8	20	4871	2091	42.9	26
GRADE 11								
Random	7379	2023	27.4	124	13746	3848	28.0	102
AIASA	1054	323	30.6	19	6271	1296	20.7	46
Exemp	1453	571	39.3	22	4060	1576	38.8	25
GRADE 12								
Random	7124	1864	26.2	125	12929	3016	23.3	103
AIASA	1247	365	29.3	20	5355	1005	18.8	44
Exemp	1407	396	28.1	21	4883	1666	34.1	28

Continued

Table 36 continued

GRADES AND SAMPLES	SCHOOL SIZE = 1000-1499				SCHOOL SIZE = 1500-2499			
	ENROLLMENTS		% IA TO TOT	N OF CASES	ENROLLMENTS		% IA TO TOT	N OF CASES
	TOT	IA			TOT	IA		
GRADE 6								
Random	2108	393	18.6	11	0	0	0.0	4
AIASA	2213	434	19.6	11	840	0	0.0	8
Exemp	1014	337	33.2	6	200	0	0.0	4
GRADE 7								
Random	10331	4771	47.6	31	3778	1886	49.9	11
AIASA	8109	2129	25.3	24	1834	209	11.4	10
Exemp	4624	2008	43.4	15	1684	651	38.7	7
GRADE 8								
Random	14631	6435	44.0	45	4567	1590	34.8	14
AIASA	15377	4573	29.7	39	2647	457	17.3	11
Exemp	7234	3115	43.1	21	1801	927	51.5	7
GRADE 9								
Random	23127	7436	32.2	71	21598	6269	29.0	46
AIASA	14930	3644	24.4	41	16504	3760	22.8	34
Exemp	7270	2207	30.4	21	12101	3931	32.5	26
GRADE 10								
Random	23854	7137	29.9	71	32181	8421	26.2	63
AIASA	10681	2577	24.1	32	26267	6787	25.8	48
Exemp	7511	2491	33.2	19	15074	5280	35.0	30
GRADE 11								
Random	23828	7303	30.6	71	29489	7850	26.6	62
AIASA	9835	1817	18.5	32	22764	4705	20.7	45
Exemp	8263	2419	29.3	22	14318	5043	35.2	30
GRADE 12								
Random	21561	6247	29.0	68	28257	6079	21.5	61
AIASA	9013	1467	16.3	32	19898	3432	17.2	44
Exemp	7736	2006	26.0	21	13558	4445	33.1	30

continued

Table 36 continued

GRADES AND SAMPLES	SCHOOL SIZE = 2500 & up			
	ENROLLMENTS		% IA TO TOT	N OF CASES
	TOT	IA		
GRADE 6				
Random	118	0	0.0	2
AIASA	.	.	.	0
Exemp	.	.	.	0
GRADE 7				
Random	1067	806	75.5	3
AIASA	.	.	.	0
Exemp	420	50	12.0	3
GRADE 8				
Random	1140	735	64.5	3
AIASA	.	.	.	0
Exemp	415	40	9.6	1
GRADE 9				
Random	5075	969	19.1	7
AIASA	4037	1115	27.6	5
Exemp	4785	1257	26.3	6
GRADE 10				
Random	10262	2752	26.9	12
AIASA	6294	1577	25.1	8
Exemp	6574	2307	35.1	9
GRADE 11				
Random	9539	1959	20.5	12
AIASA	5661	1201	21.2	8
Exemp	6027	2050	34.0	9
GRADE 12				
Random	8294	1660	20.0	12
AIASA	4977	799	16.1	8
Exemp	5654	1837	32.5	9

A close examination of the data shows that the highest percentages of the general student population who were enrolled in industrial arts in a given school size and grade level were found in more of the exemplary sample schools (18 occurrences) than the random (12 occurrences) or AIASA (3 occurrences) sample schools. In the three instances where the AIASA sample schools had the highest percentage, the percentage in the other two samples were only slightly smaller. Overall, the random sample schools tended to have the highest percentages of students enrolled in industrial arts in grades six through nine and the exemplary sample schools tended to have the highest percentages in grades nine through twelve. In a majority of instances the AIASA sample schools had the lowest percentage of students enrolled in industrial arts among the three samples with some differences in percentage being pronounced.

Appendix F

PERCENTAGE OF FEMALES ENROLLED IN REPRESENTATIVE INDUSTRIAL ARTS COURSES, REPORTED BY CHAIRPERSONS

TABLE 103

Percentage of Females Enrolled in Representative Industrial Arts Courses, Reported by Chairpersons

COURSES	RANDOM SAMPLE		AIASA SAMPLE		EXEMP SAMPLE	
	N of SCHOOLS	% FEMALE	N of SCHOOLS	% FEMALE	N of SCHOOLS	% FEMALE
Construction	71	21.6	70	22.1	40	17.8
Art metals	15	22.3	5	24.0	3	14.7
Ceramics	30	28.9	12	33.7	7	25.8
Crafts	26	19.9	17	26.4	9	20.7
Industrial crafts	13	18.3	13	23.5	8	25.6
Leather	54	23.4	24	29.2	3	5.0
Textiles	1	13.9	0	0.0	1	36.8
Jewelry/lapidary	13	29.3	4	14.1	3	20.9
Other industrial crafts	11	24.0	2	33.5	4	10.8
Architectural drafting	178	11.6	84	17.3	55	15.4
Descriptive geometry	2	8.3	1	41.9	6	11.6
Drafting	194	15.6	100	18.0	52	18.3
Drafting technology	24	12.0	18	12.0	9	11.7
Engineering drawing	41	8.7	20	10.9	16	17.1
Industrial design	6	14.3	2	5.9	1	15.4
Mechanical drawing	253	16.9	108	19.4	60	19.7
Technical illustration	4	9.0	6	15.0	5	7.8
Other drafting	12	14.7	9	12.6	3	7.0
Electricity	113	16.7	47	20.7	31	21.5
Electricity electronics	90	13.7	46	20.4	47	13.4
Electronics	41	17.8	12	16.2	21	21.0
Other electricity-electronics	4	7.5	2	22.9	4	6.3
General industrial arts	182	20.5	102	24.4	41	18.5

Continued

Table 104 continued

Graphic arts	120	20.2	40	23.6	55	17.2
Photography	41	20.7	29	21.5	23	23.4
Photolithography	14	6.8	3	24.1	2	8.9
Printing	19	19.0	9	17.6	6	21.2
Communications technology	13	21.6	15	14.6	17	18.2
Other graphic arts	11	8.1	3	39.1	5	17.2
General home mechanics	13	18.6	31	24.1	8	29.1
Fluid power	4	34.6	3	44.8	0	0.0
Industrial materials	3	39.5	0	0.0	1	26.5
Industrial materials and processes	12	14.0	8	16.3	10	10.4
Industrial processes	1	6.2	0	0.0	1	33.1
Instrumentation	0	0.0	0	0.0	0	0.0
Numerical control	0	0.0	0	0.0	0	0.0
Other industrial materials and processes	2	8.8	1	37.4	2	7.8
Manufacturing	47	23.9	63	23.4	26	17.7
Production technology	2	15.4	5	12.9	2	36.9
General metals	276	18.8	98	18.2	79	17.3
Metal machining	59	9.4	21	10.3	13	17.8
Metal technology	23	10.4	15	16.2	7	12.4
Sheet metal	22	18.4	9	12.2	6	6.3
Welding	78	13.8	16	7.5	20	10.3
Foundry	16	12.3	4	6.0	3	4.0
Other metals	8	14.9	2	9.2	2	3.1
Plastics	58	20.1	12	20.4	11	10.0
Plastics technology	6	40.1	6	27.8	3	18.1
Other plastics	2	25.5	0	0.0	0	0.0
Automotive mechanics	120	14.2	17	19.1	30	10.9
Power-automotive mechanics	39	10.5	8	10.6	9	9.7

continued

Table 104 continued

Power mechanics	92	15.0	38	13.4	31	19.7
Transportation	2	31.4	3	28.9	3	13.0
Power-transportation	14	19.8	14	24.5	13	15.0
Other power-automotive mech	19	17.3	5	17.1	9	15.4
Research and development	2	6.4	0	0.0	7	23.9
Service industry	0	0.0	0	0.0	0	0.0
General woods	409	17.5	167	20.5	89	16.6
Woods technology	96	12.5	52	19.4	28	15.3
Other woods	64	11.7	24	12.9	13	6.6
American industry	14	19.6	30	16.5	9	20.1
Exploring technology	14	16.8	12	22.5	7	19.5
Finishing material/methods	2	10.2	2	24.1	1	0.0
Other industrial arts	38	18.1	28	25.5	17	11.7

Appendix G

PERCENTAGE OF ENROLLMENTS OF HANDICAPPED STUDENTS IN REPRESENTATIVE INDUSTRIAL ARTS COURSES

TABLE 104

Percentage of Enrollments of Handicapped Students in Representative Industrial Arts Courses

COURSES	RANDOM SAMPLE		AIASA SAMPLE		EXEMP SAMPLE	
	N of SCHOOLS	% HDCPD	N of SCHOOLS	% HDCPD	N of SCHOOLS	% HDCPD
Construction	71	3.1	70	3.0	40	2.1
Art metals	15	2.1	5	5.3	3	0.4
Ceramics	30	1.5	12	2.2	7	1.1
Crafts	26	2.2	17	1.2	9	1.4
Industrial crafts	13	2.0	13	1.7	8	5.6
Leather	54	3.4	24	1.8	3	2.1
Textiles	1	0.0	0	0.0	1	0.7
Jewelry/lapidary	13	1.8	4	0.9	3	3.2
Other industrial crafts	11	5.7	2	7.3	4	4.4
Architectural drafting	178	2.7	84	2.8	55	3.0
Descriptive geometry	2	0.0	1	0.0	6	1.6
Drafting	194	2.6	100	2.5	52	1.9
Drafting technology	24	2.0	18	3.7	9	2.0
Engineering drawing	41	3.2	20	4.1	16	1.2
Industrial design	6	4.5	2	0.2	1	0.1
Mechanical drawing	253	3.3	108	3.0	60	3.1
Technical illustration	4	1.0	6	2.4	5	5.3
Other drafting	12	2.9	9	3.2	3	2.5
Electricity	113	2.9	47	2.6	31	2.4
Electricity electronics	90	3.7	46	3.3	47	2.8
Electronics	41	2.6	12	1.6	21	1.1
Other electricity-electronics	4	2.0	2	0.8	4	0.2

continued

Table 105 continued

General industrial arts	182	2.8	102	2.6	41	1.6
Graphic arts	120	2.2	40	3.6	55	2.6
Photography	41	3.1	29	2.0	23	2.0
Photolithography	14	3.0	3	2.4	2	1.0
Printing	19	5.1	9	4.1	6	4.3
Communications technology	13	1.1	15	3.0	17	1.4
Other graphic arts	11	4.0	3	3.4	5	2.8
General home mechanics	13	2.1	31	5.8	8	3.6
Fluid power	4	0.8	3	0.8	1	1.3
Industrial materials	3	10.5	0	0.0	10	2.7
Industrial materials and processes	12	2.0	8	2.0	1	6.5
Industrial processes	1	0.0	0	0.0	0	0.0
Instrumentation	0	0.0	0	0.0	0	0.0
Numerical control	0	0.0	0	0.0	2	0.0
Other industrial materials and processes	2	0.0	1	5.5	2	0.0
Manufacturing	47	4.7	63	4.3	26	2.8
Production technology	2	1.5	5	3.3	2	1.6
General metals	276	3.0	98	2.4	79	2.4
Metal machining	59	3.4	21	3.2	13	2.5
Metal technology	23	3.8	15	4.0	7	1.0
Sheet metal	22	3.4	9	2.9	6	1.9
Welding	78	3.7	16	1.4	20	3.0
Foundry	16	2.3	4	3.4	3	0.5
Other metals	8	1.9	2	7.7	2	0.6
Plastics	58	3.1	12	3.3	11	1.7
Plastics technology	6	1.8	6	1.7	3	0.7
Other plastics	2	0.0	0	0.0	0	0.0
Automotive mechanics	120	2.5	17	1.3	30	2.0

continued

Table 105 continued

Power-automotive mechanics	39	3.8	8	6.9	9	1.5
Power mechanics	92	3.7	38	2.3	31	1.8
Transportation	2	0.0	3	0.2	3	1.7
Power-transportation	14	2.6	14	4.0	13	3.4
Other power-automotive mech	19	3.6	5	2.3	9	3.1
Research and development	2	3.7	0	0.0	7	3.3
Service industry	0	0.0	0	0.0	0	0.0
General woods	409	2.6	167	2.5	89	2.5
Woods technology	96	2.5	52	2.8	28	2.9
Other woods	64	2.4	24	2.1	13	2.4
American industry	1[illegible]	2.7	30	1.7	9	1.2
Exploring technology	14	2.7	12	3.2	7	1.9
Finishing material/methods	2	2.2	2	4.8	1	0.2
Other industrial arts	38	3.3	28	4.9	17	1.9

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ASP JOB NO. = 1291 SYSTEM ENTRY TIME = 10.55.46 DATE = JAN 17, 1981
PURGE 11.12.20 JAN 17, 1981

B1185IA 30588

B ACCOUNTING SUMMARY START TIME ON MAIN = NONE

EXECUTION TIME ON NONE	00.00.00	.00
DISK EXCPS	0	.00
TAPE EXCPS	0	.00
KILOBYTE SECONDS	0	.00
CARD INPUT ON INTRDR	0	.00
CARDS PUNCHED		
LINES PRINTED		
LOCAL	12687	8.88
PLOTTER CHARGES		
PRIORITY CHARGES		
	IDLE OUTPUT	2.22-
SETUPS		
FORMS/CARRIAGE TAPE	1	3.00
PRINT TRAIN	1	1.50
TOTAL RUN CHARGES		11.16
RRENT BALANCE		225.73